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The Influence of Parenting Style and Perceived Mattering on Identity Style Orientation

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A thesis submitted in partial fulfillment of the requirements for the degree in Doctor of Philosophy

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by

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Abstract

One of the key developmental challenges young people face in adolescence and early adulthood is the formation of an adult identity. Based on the work of Erik Erikson (1963, 1964, 1968), this task is conceptualized as a psychosocial process that reflects an ongoing dialectic between individuals and their social environment. This dissertation focused on the influence of parenting style, and the perception of mattering to others, on the processing of identity-relevant information, characterized by an identity style orientation (Berzonsky, 1989, 1992). The multidimensional model of identity (Côté & Levine, 2002) was used as a framework to unite the bodies of literature on these topics, and to form hypotheses that were tested through the analysis of two longitudinal datasets.

The first study used data from the National Longitudinal Survey of Children and Youth (NLSCY; Statistics Canada, 1997) to examine the relationship between nurturing and rejecting parenting styles and the development of an identity style orientation. A series of hierarchical models were used to regress young adolescents' reports of parental behaviour on the three identity styles and later psychosocial outcomes, controlling for reports of parenting style provided by their primary guardians. Results showed that a nurturing parenting style was related to the normative and informational identity styles. The diffuse identity style was associated with parental rejection for boys, and a low level of parental nurturing for girls. The youth reports of parenting style were significantly better predictors than the corresponding assessments from their parental guardians.

A second study was conducted to examine the association between the identity style orientations and the perception of mattering to parents and friends. Analysis was based on

repeated measures gathered from a university population during their first three years of school (Adams, 2003). Random-intercept models were used to separate variation within- and between-subjects over time. Findings were limited, though there was some evidence that mattering to mother was associated with the normative and informational identity styles, and mattering to friends was related to the diffuse-avoidant orientation.

Results from both studies provided support for the theoretical model, positioning it as a useful tool for future research on identity development.

Keywords

Identity style, parenting style, mattering, multidimensional model of identity, random effects, NLSCY, longitudinal study, adolescence, emerging adulthood, Erikson

For Lynn and Joan,

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Table of Contents

List of Tables

List of Figures

List of Appendices

Chapter 1

1 Theoretical Foundation and Literature Review

One of the most influential theories in the field of identity studies has been that of Erik Erikson. He proposed a theory of development that spans the life-course, and which is fundamentally psycho*social* in nature (1963, 1964, 1968). In other words, for Erikson, the individual is embedded in social contexts whereby relationships with significant others and the community more broadly are pivotal to further growth and maturation. At the same time, he proposed that development unfolds through a series of stages in which the individual is confronted with a new type of contextual challenge that potentially brings opportunities to strengthen a vital psychosocial competency. Each stage builds on the abilities and confidence accrued from the mastery of preceding stages, compelling the individual to greater levels of psychosocial strength, maturity, and complexity.

Erikson argues that the key developmental challenge of adolescence is the formation of an adult identity, a suggestion that has been widely adopted in the research on youth and identity development (Cote & Levine, 2002). It is during this period that young people consolidate the self-understanding gained in childhood, and reorient themselves to a wider social circle. This is not a one-way process undertaken alone by an individual. As he explains,

> *Identity formation thus goes beyond the process of identifying oneself with others… It is a process based on a heightened cognitive and emotional capacity to let oneself be identified as a circumscribed individual in relation to a predicable universe which transcends the circumstances of childhood. (Erikson, 1964, p. 90)*

For Erikson, the development of an adult identity is a process of mutual recognition, and feedback and support from others is a critical component in the success of the endeavor. However, relationships can only impact an individual to the degree, and in the manner, that they are recognized as meaningful to the individual. The actions and intentions of others are always filtered by perception and interpretation, and in this way become incorporated into identity (Erikson, 1963, 1968).

This study focuses on the ways in which individuals process identity-relevant information, and how the resulting "identity style orientations" (Berzonsky, 1989, 1992a, 1992b) are influenced by perceived relationships with significant others. The results of this study are presented below by way of two separate statistical analyses. The first looks at the impact of perceived parenting style in early adolescence on identity style and later psychosocial outcomes. The second analysis examines the role of perceived "mattering", a construct defined as "the psychological tendency to evaluate the self as significant to specific other people" (Marshall, 2001, p. 474). Both of these analyses are interpreted through the framework of Erikson's tripartite identity model, and the elaboration done by Côté and Levine (2002) using the personality and social structure perspective (House, 1977).

This chapter begins with a review of Erikson's tripartite model of identity, which provides the basis for the theoretical framework of the dissertation. Next, Berzonsky's theory of identity styles is reviewed, making an explicit connection to the reflexive processes that are required to form personal-, social-, and ego-identities. Then, in section 1.3, the research on parenting styles and the family environment is discussed with regard

to identity formation. This body of work will provide direction for the analysis of the National Longitudinal Survey of Children and Youth (NLSCY), which is presented in Chapter 2. Section 1.4 goes on to introduce the concept of "mattering", making a link between the three forms of identity. The construct of mattering is investigated in Chapter 3, in terms of relationships between a measure of mattering and identity style in a group of young adults during the first 3 years of their university education. The present chapter then concludes with a synthesis of the concepts of identity style, parenting style and mattering, along with hypotheses regarding their potential interrelationships and interactions.

1.1 The Tripartite Identity Model

There are three levels, or types, of identity that have been established through Erikson's work: social, personal, and ego identity (Erikson, 1968). These types of identity are distinguished by their content, and the degree of self-reflection involved in their formation. All three can be distinguished from the idea of the "self" or "self concept". At a fundamental level, human consciousness involves the ability of individuals, as "subjects", to treat *themselves* as "objects" (Gecas & Burke, 1995; Hewitt, 2007). The school of symbolic interactionism, built heavily on the work of George Mead, has shown how individuals progress during childhood development in their ability to conceive of themselves as objects from the perspective of others, perceptions which become incorporated into internalized self-images.

At the lowest level, individuals are conscious of specific aspects of themselves and their behaviour as they engage in particular activities. In Erikson's terminology, these are the

"selves", which represent "others' perceptions of a person's behavioural repertoires" (Levine, 2005, p. 178). These can be aspects of social roles–"social selves"–or general personal characteristics–"personal selves". Erikson (1968) suggests that there are many different selves, making up a "composite Self" (p. 217), but that what each "self" represents is essentially a snapshot of the individual that is "continuous in time and uniform in substance" (p. 218). As examples, he speaks of a "drowsy self", a "self among friends", etc. Symbolic interactionists speak of "meaning" being an "emergent property of objects" (Hewitt, 2007, p. 143), in that meaning is derived from the relation of objects to one another in a given interaction or context, and can therefore change with time and place. In a similar sense, the "meaning" of each of the selves is tied to the situation that gave rise to it. "Self-concepts" as the individual's reflections on the selves, are thus contextualized, or "first-order cognitive reflections" (Levine, 2005, p. 179).

One level up, so to speak, or one additional step removed from the individual in action, are the personal and social identities. Identities are distinct from self-concepts because they are no longer tied to particular interactional contexts; they represent purely "formal operational thought", to use a Piagetian term (Durkin, 1995). In the same way that the self-concept subsumes the selves in reflection, so does the personal identity subsume the personal self-concepts, and the social identity subsumes the social self-concepts. These identities reflect "second-order reflections on the first-order reflective experiences called self-concepts" (Levine, 2005, p. 179). Levine suggests that they arise gradually, as individuals reflect on their self-concepts and commonalities and patterns become apparent that generalize across situations. In other words, "to be aware of one's social

and/or personal identity means that one is thinking about and deriving a generalized, transcontextual understanding of the meanings of one's personal and social self-concepts" (2005, p. 179).

To more clearly differentiate these two forms of identity, Côté (1996a) suggests that "personal identity refers here to interpersonal styles that have been shaped by the actual life experiences of individuals. In a sense, it expresses the culmination of an individual's biography at a given point in time" (p. 421). Personal identities reflect the physical and psychological characteristics, values, and personality attributes that the individual feels sets them apart from others. In contrast, social identity designates an individual's position(s) in the social structure. Importantly, there are subjective and objective components of both types of identity. For example, in the realm of personal identity, an individual might hold a subjective identity as an outgoing and conversational person, but the objective assessment could be that he or she is overbearing and long-winded. While a disagreement between objective and subjective social identities may be rarer, they can occur, for example in the case of mixed "race" individuals who might take exception with the social identity they are assigned by others (cf. Brunsma & Rockquemore, 2001). Additionally, personal and social identities can impact on one another, in that personal identities can be used to validate, enhance, or undermine social identities; similarly, social identities can challenge or reinforce elements of personal identity (Côté & Levine, 2002). These dynamics are highlighted in Goffman's (1963) work on stigma, and the complexities that come into play when one includes the subjective/objective distinction are particularly evident in his examples of "discreditable" stigmas.

The final, and arguably most important, level of identity is that of ego identity. In a similar logic, ego identity subsumes the social and personal identities as "second-order cognitive reflections". At this point, one can imagine a series of concentric levels of reflection surrounding the individual in action, each encompassing the "content" of those below. With each degree of removal from the center, the level of reflection allows for a more generalized understanding of meaning, and with it, a greater awareness and appreciation of the ways in which meaning enters into, and is negotiated within, the context of interaction. The level of ego identity is significant, however, because only at this point is it possible to speak of a "reflexive sense of agency" (Côté & Levine, 2002). There is a distinction that occurs at this point, because at this point in ego development "the ego acquires the ability to reflect on itself, sense itself as a continuous entity in time and social space, and in so doing give itself the necessary awareness for achieving a sense of *self-control*" (Levine, 2005, p. 179). In other words, this level of reflection allows individuals to realize that they are not bound to their personal and social identities, but rather that they can think about "who they are" and "what they want to be", and can make intentional choices on that basis. Importantly, this level of reflection does not ultimately free the individual from the fact that meaning is tied to interaction. Rather, it reorients them to it as agentic participants.

At this point in the chapter, it is helpful to turn from identity formation for a moment and say more about the process of ego development itself. According to Erikson, "a 'healthy' personality *actively masters* his [or her] environment, shows a certain *unity of personality*, and is able to *perceive* the world and himself [or herself] *correctly*" (1968, p.

92). This statement points to the two key functions of the ego. First, the ego *synthesizes* experience, meaning it "actively defines situations and develops constructions of reality" (Côté & Levine, 2002, p. 104). It is this aspect of the ego that is responsible for the general organization of experience within various cognitive domains. Second, it is the *executive* of the personality, thus producing "deliberate presentations of self and management of impressions" (Côté & Levine, 2002, p. 104). Other theorists have suggested that it is possible for the ego to take a variety of approaches to these two tasks, notable among them are the "identity styles" suggested by Berzonsky (1989, 1992a, 1992b; see also Kroger, 2005). The ego functions largely unconsciously, however, and is able to gain access to consciousness mainly via what Erikson calls the all-conscious "I". One of the main tasks of the ego is to continuously synthesize the selves and their meanings, as experienced by the I, with those in memory, and with the ideal selves. In doing so, it creates a unity and coherence in the Self. The ego is also responsible for executing or activating the appropriate selves in response to its perception of the demands of the situation, and by successfully doing so, in demonstrating its unity and coherence to others. Generally, the ego coordinates both of these tasks through the domains of personal and social identity. To the extent that it is successful, one can expect that the subjective and objective components of these identities should be in sync.

It is in the context of "problematic" interactions that the ego identity becomes operative, and it is in similar such encounters that it is most commonly "sensed". A "problematic" encounter is one in which the meaningfulness of the individual's personal or social identity has been challenged, and thus there is no pre-existing "content" or script for

handling the ongoing situation. This might be a moment where people sense a threat to their "ontological security", to use Gidden's (1991) term. In such cases, the ego "must sense within itself, through its own identity, a core being with sufficient competence to initiate the redefinition (reconstruction) of its personal and/or social identity domains and re-establish their legitimacy in interaction" (Levine, 2005, p. 181). In other words, it is in these moments that the "agentic" capacity of the ego identity becomes important. Finally, like the social and personal identities, ego identity too has subjective and objective components. The subjective component of ego identity "is the awareness of the fact that there is a selfsameness and continuity to the ego's synthesizing methods, the style of one's individuality, and that this style coincides with the sameness and continuity of one's meaning for significant others in the immediate community" (Erikson, 1968, p. 50). The objective component of ego identity would be the assessment by others of the individual's mental processes (Côté & Levine, 2002).

Côté and Levine (2002) have incorporated Erikson's typology into their multidimensional model of identity formation, combining it with the conventions of the personality and social structure perspective (House, 1977) and ideas regarding the social construction of reality introduced by Berger and Luckmann (1966). Their model shows how social, personal, and ego identity correspond respectively to macro-structural, micro-interactional, and individual, psychological factors, and how iterative movement amongst the levels produces a continuous feedback loop that connects each person to the broader society through group associations and communication processes (Côté & Levine, 2002, p. 132).

Generally speaking, the cyclical interplay between individuals and the social structure starts with institutionalized norms and conventions that provide a framework to guide interaction and behaviour in a given situation. As Côté and Levine explain, "beginning with this process, social structure is reproduced, however imperfectly, and it is at the intersection between social structure and interaction that we find socialization processes and social control mechanisms" (2002, p. 132). This can include "primary socialization" in the context of significant others (e.g. family), and "secondary socialization" by institutions (e.g. schools, media, and peers) (Tyyskä, 2009, p. 49). Internalization of these processes by an individual provides content for the social and personal identities, and is mediated by the synthetic abilities of the ego to accurately perceive and filter the information. The individual then relies on this internalized knowledge to guide future interactions, contingent on the executive abilities of the ego to identify and then produce the appropriate behaviour in a particular environment. To the degree that individuals in an interaction seek to establish a common definition of a situation in order to manage and contextualize their self-presentations (see Goffman, 1959), successful and accepted patterns of behaviour become normative, and on a wider level become codified and subsequently reproduced through institutional socialization. This process represents a feedback loop that results in a correspondence between a society and its members. As Côté (1996a) explains, "through the socializing influence of institutions, cultures nurture certain personality characteristics and thereby encourage the development of certain character-types" (p. 419).

Côté and Levine (2002) use this model to illustrate the psycho*social* nature of identity formation and maintenance, and highlight the intersecting roles of the individual's ego processes and feedback from others. Figure 1, drawn from Côté and Levine (2002), shows a cyclical process that moves between social, personal, and ego identity, separated into ego and self-definitional behaviours that are contained within the individual ("person"), and those that are a result of interactions with others that implicate the social and personal identities ("context"). Further, the diagram reflects the distinction between objective and subjective aspects of identity. As discussed previously, "the "objective" distinction refers to the behaviors that others are exposed to (representing personal and social identity), or make inferences about (a person's self-definition and ego processes). The "subjective" distinction refers to ego experiences of all three levels of identity" (Côté & Levine, 2002, p. 134). Objective aspects of identity become the fodder for identity negotiation, while the subjective aspects of identity are the domain of reflexivity.

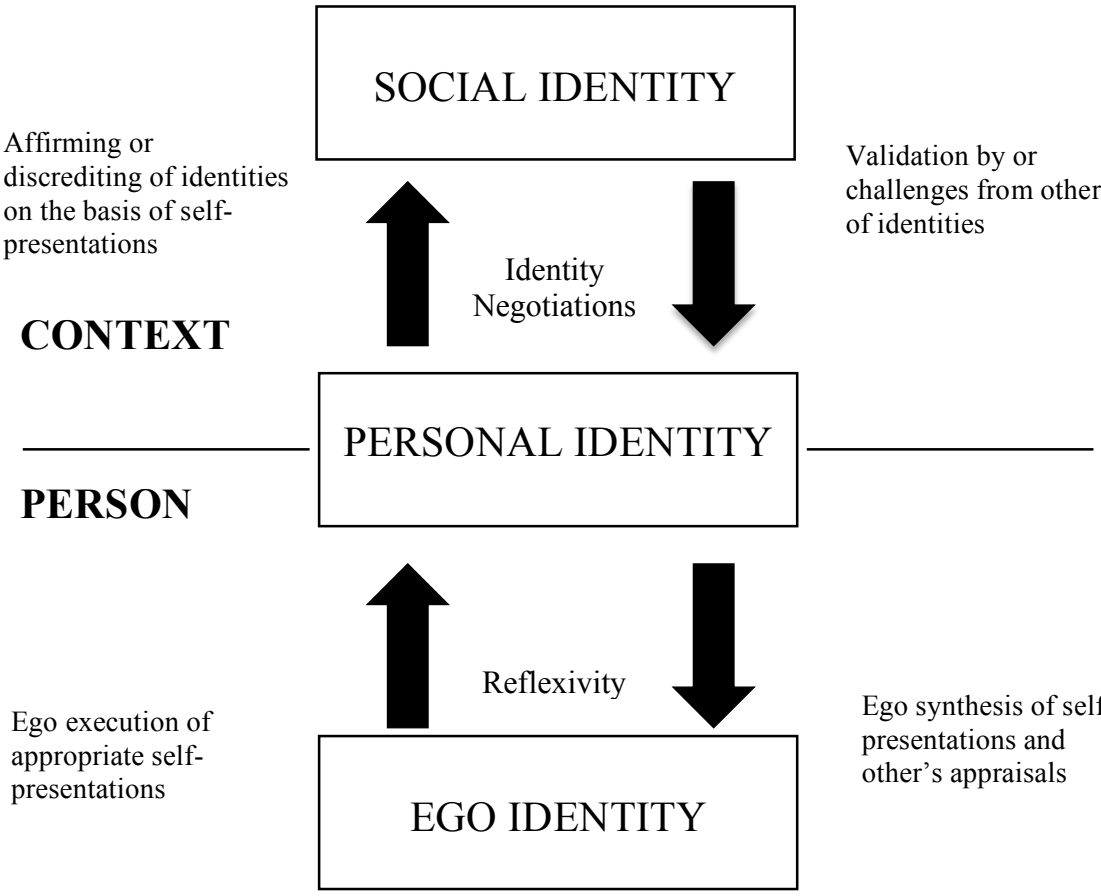

Figure 1: Multidimensional model of identity formation and maintenance.

Note. From *Identity formation, agency, and culture: A social psychological synthesis* (p. 135), by J. E. Côté & C. Levine, 2002, Hillsdale, NJ: Lawrence Erlbaum. Copyright 2002 by Lawrence Erlbaum Associates, Inc. Reprinted with permission.

The interchange between the contextual and personal dimensions of identity, involving both objective and subjective aspects, is critical to the development of a strong ego. Erikson uses the term "actuality" to refer to "the world verified in immediate immersion and interaction… the world of participation, shared with other participants with a minimum of defensive maneuvering and a maximum of mutual activation" (1964, p.

165). This he distinguishes from "reality", which involves a clear perception of the phenomenological world, but lacks the significant interaction with others by which a person can be "'inspired with active properties,' even as he so inspires others" (p. 165). According to Erikson, "it is the ego's very essence to maintain an active state not merely by way of making compromises with reality but by a selective involvement in actualities." (p. 166). While a sense of identity can be held subjectively by an individual, it is only "meaningful" once it has been validated through interaction with others. As Weigert, Teitge, and Teitge (2007) explain,

> *Only those aspects of self that are publicly validated, however, become really fateful, because only they enter the interactional reality out of which identities are constructed.... To be an identified self is to be a "displayed" self.... Persons committed to one or another identity must still meet the structural demands of fashioning action in accordance with the logic and assumptions of the situation to achieve the significance they seek. The imperative to act significantly links the inner experience of each participant into a system of meanings realized in interaction (p. 48, 50, 52).*

The ego identity develops as it is reinforced through successful and meaningful social interactions, in which the personal and social identities find support and recognition from others (Côté & Levine, 2002). Indeed, it is the reflexive awareness of the stability, continuity, and style of the ego's synthetic and executive functions in managing and displaying valid personal and social identities that form the subjective sense of ego identity itself (Erikson, 1968). A strong sense of ego identity that is nurtured by the community should be reflected in an individual with strong social ties and an integrated, stable personality (Côté & Levine, 2002).

The remainder of this chapter focuses on one particular measure of identity, the identity style orientations developed by Berzonsky (1989), and its association with two methods

of assessing social relationships: perceived parenting style and perceived mattering (Marshall, 2001).

1.2 Identity Style

While the identity status theory proposed by Marcia (1966, 1980) has the longest legacy as an Eriksonian approach, Berzonsky's work on identity style orientation has provided an alternate framework for understanding the task of identity formation. In the identity status model, individuals are classified into four categories based on two dimensions: identity exploration and commitment (Marcia, 1966). *Identity achievers* are individuals who have gone through a period of self-exploration and identity crisis, and who have emerged with a set of reflexively-determined commitments. In contrast, those who are *identity diffused* lack commitments, and are not actively participating in their identity formation. Individuals in a state of *moratorium* are engaging in identity exploration, but have yet to form commitments, and individuals who are *foreclosed* have commitments that were not derived from any reflexive, exploratory process. While Marcia's model formed the basis of much of the identity research in the decades following its formulation, it faced a number of critiques (e.g., Côté & Levine, 1987, 1988a, 1988b). Consequently, a number of theorists, including Berzonsky, have moved away from a *structural* approach to identity, in favour of one that highlights a developmental *process* (Bosma & Kunnen, 2001).

In Berzonsky's social-cognitive model (1989, 1992a, 1992b), identity is conceptualized as an implicit self-theory that provides cognitive structure for the processing, organization, and understanding of information about the self. From this perspective,

identity is a process that functions on different levels to guide and regulate behaviour, to respond and adapt to environmental feedback, and to integrate experience into higher-order personal constructs and theories. Individuals approach this task in different ways, and three typical orientations have been identified by Berzonsky that "comprise the *mechanisms* by which self-relevant information and experiences are encoded, processed, organized, and revised" (Berzonsky, 1989, p. 270, emphasis added). These processes are considered to operate on at least three different planes (Berzonsky, 1990). The lowest level is reflected in the immediate cognitive and behavioural responses that individuals employ in day-to-day interactions and tasks. Patterns of responses are collected into systematic social-cognitive strategies, all of which are developed by late-adolescence, and the typical strategy that characterizes an individual is referred to as his or her identity style.

Using the language of the tripartite identity framework, an implicit self-theory can be most closely analogized to the social and personal identities. As Berzonsky explains, "the self-theory or identity structure contains cognitive schemata and scripted behavioral strategies" that have been deduced from experiences and adaptations within a social context (1990, p. 176). These theories undergo revision in a dialectical cycle as new information is provided from ongoing interactions and reflexive processing. This activity, characterized by the identity styles, reflects the synthetic and executive functions of the ego. Alterations of the identity structure are prompted by dissonance arising from social experiences and/or self-reflection. To the degree that new information is compatible with the existing structure, it will be assimilated, and will result in a strengthening of the

present construction. Otherwise, a change in the organization of the identity will be required to accommodate it. The level of identity at which the adjustment is required will depend on the degree to which the current structure is called into question, and to the extent that the required integration is limited, the process may occur in a relatively automatic fashion. The processes of identity formation can also interact with the structure of identities, in that "well organized and integrated self-constructs may serve to "drive" processing and assimilation in an efficient but biased fashion" (p. 179). The identity style orientations reflect characteristic differences in the approach to this dialectical activity. Three distinct processing styles have been identified: informational, normative, and diffuse-avoidant.

The deliberate seeking, exploration, and processing of information characterizes the *information-oriented* style. Individuals who adopt this approach retain a healthy skepticism vis-a-vis their current self-theories, and are open to changing their self-constructions after critically evaluating alternatives, which they intentionally investigate and pursue. *Normatively-oriented* individuals, by contrast, resolve identity conflicts in a relatively automatic way by conforming to the expectations and demands of significant others and reference groups (Berzonsky, 2011). These individuals tend to be dogmatic in their self-perceptions, motivated to maintain their existing identity-structures and defensive in the face of information that would be challenging or destabilizing. Finally, a *diffuse-avoidant orientation* is typified by a reluctance to deal with identity conflict. Individuals characterized by this identity style are more likely to procrastinate or avoid making self-relevant decisions in a considered fashion, and are more likely to have their

behaviour dictated by the momentary demands and incentives of a particular situation. It is important to reinforce, however, that while individual differences might reflect characteristic preferences in the methods employed to manage self-relevant information, each of the social-cognitive strategies underlying the identity styles are available to all individuals at each developmental stage throughout the life cycle (Berzonsky, 1990). Indeed, all respondents are typically assigned scores for each of the three styles, reflecting the fact that everyone can be characterized along a high-low continuum for each style, albeit with each person tending to have one preferred style. Dictates of the culture or socio-historic period, as well as specific environmental demands, may override an individual's preferred style and prompt the deployment of an alternate approach.

Consistent with Erikson's designation of identity formation as a key task for youth, studies have begun to examine changes in identity style usage across adolescence and early adulthood (Berozonsky, 2011; Duriez, Luyckx, Soenens, & Berzonsky, 2012). These studies have shown a general increase over time in use of the informational identity style, in particular. Based on a meta-analysis, Bosch and Card (2012) concluded that changes in identity exploration and commitment associated with identity style begins in middle adolescence, and peaks during the young adult, college years. While gender differences have been associated with the informational or normative identity styles only sporadically, some studies have found that males tend to report more use of the diffuse-avoidant identity style than females (Berzonsky, 2011; Bosch & Card, 2012). Bosch and Card suggest this may be a result of identity exploration beginning earlier for females,

and Berzonsky and Kinney (2008) suggest that gender-role expectations and differences in parenting behaviors are possible explanations that remain to be investigated.

The accumulating empirical literature confirms that the identity styles are related to a wide variety of outcomes, including: academic performance (Berzonsky & Kuk, 2000, 2005), coping skills (Berzonsky, 1992b), value orientations and personal epistemic beliefs (Berzonsky, 2004a; Berzonsky, Cieciuch, Duriez, & Soenens, 2011), psychosocial maturity (Adams, Berzonsky, & Keating, 2006), and personal well-being (Berzonsky, 2003). A consistent correspondence between identity style and identity status is well documented; the informational style has been associated with the achievement and moratorium statuses, the normative style with foreclosure, and the diffuse-avoidant style with identity diffusion (Adams et al., 2006; Berzonsky, 1989, 2011; Berzonsky & Kuk, 2000). Identity style has also been shown to account for a unique amount of the variation in different measures of identity commitment and exploration even after general cognitive processing is controlled (Berzonsky, 2011).

Key elements of the social environment that require individual adaptation are relationships with parents, family, and peers. The following sections review the research done at the intersection of identity style and personal relationships with significant others.

1.3 Parenting Style and the Family Environment

Early research on parenting styles classified practices based on two dimensions: demandingness and responsiveness (Baumrind, 1966, 2005; Maccoby & Martin, 1983). A cross-classification of these concepts yielded four types of parenting. *Authoritative*

parents are both responsive and demanding, while those who are *authoritarian* make demands but are not responsive. *Permissive* parents are overly responsive without being demanding, and *rejecting-neglecting* (or *uninvolved*) parents are neither. These prototypes were eventually broken down to accommodate a greater range of styles along the two dimensions, and to allow for additional aspects of the parenting relationship to be incorporated (e.g. intrusiveness, Baumrind, 2005). A consistent body of research has linked characteristics of authoritative parenting with the most positive adjustment outcomes in children and adolescents, including aspects such as psychosocial maturity, social responsibility, cognitive competence, and academic success (Baumrind, 1991, 2005; Maccoby & Martin, 1983). In their study on the effects of economic hardship, Lempers, Clark-Lempers, and Simons (1989) found that low levels of parental nurturance, and inconsistent, rejection-oriented discipline, mediated the relationship between family hardship and adolescent depression, loneliness, drug-use and delinquency. They argue that these parenting practices are basic dimensions of parenting, and that nurturing behaviour, coupled with consistent discipline, reflect a "child-centered" parenting style that is associated with lower levels of adolescent distress.

For the field of identity studies, one of the key elements distinguishing authoritative parenting is support for autonomy. Baumrind (2005) suggests that it is the combination of autonomy support with warmth and behavioural, but not psychological, control that makes this style of parenting consequential. As she explains,

> *Autonomy support and psychological control are not binary opposites of a single continuum. Not all parents who eschew the use of psychological control are actively autonomy supportive. Neither nonauthoritarian-directive nor authoritative parents are psychologically controlling, but authoritative parents,*

> *unlike nonauthoritarian-directive parents, are also autonomy supportive. Authoritative parents are both power assertive in that they enforce their directives and autonomy supportive in that they encourage critical reflection and reasoning (Baumrind, 1991; Darling and Steinberg, 1993). (p. 67)*

An important debate has taken place surrounding the definition of "autonomy". Researchers working within the separation-individuation framework have tended to view autonomy as independence, and emphasize the disconnection from parents in favour of peers. They argue that some degree of detachment, or emotional autonomy, is healthy in older teens and adults (Frank, Avery, & Laman, 1988; Beyers & Goossens, 1999). Other researchers, such as Ryan and Lynch (1989) have drawn an important distinction between the outcomes of autonomy, independence and detachment. According to them, autonomy is associated with self-governance and self-regulation, while independence connotes self-reliance. These constructs are orthogonal to one another, and also differ from detachment, which represents an emotional withdrawal. Their findings show that it is detachment that is most associated with feelings of parental rejection, low self-regard, and low family cohesion.

Noom, Deković, and Meeus (2001) reviewed the various definitions of autonomy, and they argue for a multidimensional perspective, one that differentiates between attitudinal (i.e. cognitive), emotional, and functional autonomy. Soenens and colleagues (Soenens et al., 2007; Soenens, Vansteenkiste, & Sierens, 2009) make a similar argument, distinguishing between parental autonomy support that promotes independence, and that which supports volitional functioning, or self-determination. This second form of autonomy support is more closely aligned with the concept of *agency*, as discussed in the context of identity studies. Indeed, more of the current identity literature is aligned with

the perspective of Grotevant and Cooper (1986), who presented a model of individuation in which elements of individuality and connectedness were both essential for healthy identity development (see also Adams & Marshall, 1996; Campbell, Adams, & Dobson, 1984; Meeus, Iedema, Maassen, & Engels, 2005). In a sentiment that echoes Erikson, they argue that, "the adolescent's ability to explore worlds outside the family develops as a function of the relationships within it" (p. 86). Research on parenting styles supports this perspective, showing that it is predominantly authoritative parents who neither over-control, nor under-control, their children, and who support both individuality and connection, who foster the most opportunity for self-exploration and personal growth (Côté, 2009).

While a robust body of research exists to demonstrate the developmental impact of parental and family relations on identity status, considerably less attention has been paid thus far to their relationship with the identity style orientations (Berzonsky & Adams, 1999; Berzonsky, Branje, & Meeus, 2007). The studies that have been done find the most consistent association between the diffuse-avoidant orientation and parenting styles that are overly permissive or lack nurturance, and family contexts in which warmth, trust, and communication is scarce (Berzonsky, 2011). However, the results for the normative and informational styles are less definitive. Both have been shown to be associated with authoritative parenting and open, communicative, and cohesive family environments. In addition, more demanding, less rational parenting practices have been found in some instances to predict an informational style, in contradiction to the hypothesized relationship with the normative orientation (Smits, Soenens, Luyckx, Duriez, &

Goossens, 2008; Soenens, Berzonsky, Dunkel, & Papini, 2011). The inconsistency in the results have led to calls for further investigation into the connection between the identity styles and parenting and family variables, in particular through the use of longitudinal data and non college-age samples (Berzonsky, 2011; Berzonsky et al., 2007).

Identity style has also been suggested as a potential mediator of the association between the parenting and later identity formation measures and outcomes. In particular, studies with both early adolescents and college students have identified the normative identity style as a mediating factor in the relationship between the parental/family environment and identity commitments and foreclosure status (Adams et al., 2006; Berzonsky, 2004b; Berzonsky & Adams, 1999; Berzonsky et al., 2007). An important distinction has also been drawn between the effects of the dyadic parent-child relationship, on the one hand, and the more contextual effects of the general family environment, on the other. Matheis and Adams (2004) found that adolescents from emotionally expressive families were less likely to be characterized by a diffuse/avoidant identity style, whereas a normative style was more characteristic of adolescents from cohesive families. However, they did not find any relationship between family conflict and identity style orientations. They identify their study as the first to examine identity style in conjunction with a global measure of the family environment, and encourage more research in the area.

Finally, one other aspect of the parent-child relationship that has been relatively overlooked is the difference between parental and child perceptions of parenting styles (Tyyskä, 2009). Some research has found that adolescents' reports of parenting style, when compared with parental assessments, are more useful in predicting academic

achievement (Paulson, 1994), and self-reported psychosocial competence (Bell, Rychener, & Munsch, 2001). Other research has found that both parent and adolescent perceptions of authoritative parenting were significantly related to parent-child conflict and the development of adolescent autonomy (Smetana, 1995).

Paulson (1994; Paulson & Sputa, 1996) found that parents perceived themselves to be both more demanding and more responsive than their children did. However, other research has found that adolescents perceived their parents to be permissive and authoritarian, while parents believed themselves to have a more authoritative style (Smetana, 1995). Most studies have found only moderate correlations between parent and child reports (Paulson, 1994; Paulson & Sputa, 1996; Smetana, 1995), though the degree of congruence between the ratings has been shown to be less important than the individual reports on their own (Bell et al., 2001).

The following section focuses in more detail on the aspects of relationships with significant others that foster a sense of connection and provide a secure foundation from which healthy individuation and self-exploration can occur.

1.4 Mattering

In their treatise on the developmental social psychology of identity, Adams and Marshall (1996) define socialization as "the tendencies that establish and maintain relations between individuals and that ensure the integration and respect of individuals as participants within a society that regulates behaviours according to societal codes" (p. 430). They assess this process to be essential to human survival, and suggest it serves

both an individual and a social function, which can be seen to operate both *intra*- and *inter*-personally. The individual function serves to *differentiate* the individual by providing a sense of uniqueness, while the social function *integrates* the individual into the community and provides a sense of belonging. These functions are not seen as contradictory, but rather complementary. Erikson (Erikson & Stein, 1960) himself describes this dual nature of identity when he says,

> *It is this identity of something in the individual's core, with an essential aspect of a group's inner coherence, which is under consideration here: for the young individual must learn to be most himself where he means most to others–those others, to be sure, who have come to mean most to him. The term identity expresses such a mutual relation in that it connotes both a persistent sameness within oneself (self-sameness) and a persistent sharing of some kind of essential character with others. (p. 38)*

According to Adams and Marshall (1996), it is a healthy balance between differentiation and integration that is most adaptive, and serves to furnish the individual with a sense of *mattering* to themself and to others. Rosenberg and McCullough (1981) are generally credited with introducing "mattering" as an academic construct, which they defined as having three key components: attention, importance, and dependence. *Attention* is the most fundamental element of mattering; the knowledge that we are not invisible to those around us. *Importance* is the sense that others care about what is happening to us and in our lives, even if they do not approve of it. The authors highlight the sense that we are an ego-extension of another person as being a strong indicator of importance. Finally, *dependence* is associated with the knowledge that others rely on us. They argue that, "mattering is a motive" (p. 4), and serves as an important avenue for social integration. It is the sense that we qualify as a "significant other" to someone else in a way that is meaningful, most critically to those who are "significant" to us.

Rosenberg and McCullough's (1981) initial research on the construct did not use a specific measure of mattering, but adapted items being employed in a number of large-scale surveys that examined the relationship between adolescents and their parents. Their results showed a positive relationship between mattering and self-esteem, and a negative relationship with depression, anxiety, and delinquency. It is important to note that the influence of mattering was not dependent on the perceived parental assessment being positive; in fact, they argue that the opposite of mattering is indifference, rather than punishment or condemnation. Others have suggested the alternative should be conceptualized as "marginality" (Schlossberg, 1989). Rosenberg and McCullough also found a weak positive effect of socio-economic status, which they tie to a parental emphasis on a child's psychological and emotional experiences, rather than overt behaviour and appearance. Being an only child was also correlated in a positive way, even after controlling for race and class. They conclude that mattering is an important concept to both the individual and society, in that it "touches the profoundest depths of self and relates to depression, anxiety, and anomia" (p. 28).

While mattering remains a relatively under-researched concept (Owens & Samblanet, 2013), investigators have been developing it in some significant ways, primarily in conjunction with psychological well-being. Taylor and Turner (2001) published an influential paper that demonstrated a strong and unique contribution of mattering to depressive symptoms among women, even after controlling for other risk factors. In a later study, they examined ethnicity, and found more commonalities than differences, though mattering had a protective effect against depression only among non-Hispanic

whites (Turner, Taylor, & van Gundy, 2004). France and Finney (2009) demonstrated an association between mattering and positive relationships with others, purpose in life, and self-acceptance. However, they found that worrisome thinking was only related to the dimensions of awareness and importance, and the only significant association with generalized anxiety was the dimension of awareness. Elliott, Colangelo, and Gelles (2005) highlighted a significant indirect connection between mattering and suicidal ideation, mediated fully by a path through self-esteem and depression. Work with early adolescents has also found a relationship between mattering and depression and anxiety (Dixon, Scheidegger, & McWhirter, 2009).

Some predictors of mattering have been identified, such as level of education, the quality of the work environment, and family ties (Schieman & Taylor, 2001). Additionally, it has been shown to play a mediating role between volunteering and well-being (Piliavin & Siegl, 2007), and perfectionism and depression (Flett, Galfi-Pechenkov, Molnar, Hewitt, & Goldstein, 2012). Significant gender differences have been found in a number of studies, in age groups ranging from late adolescence through adulthood, with females reporting higher levels of mattering (Taylor & Turner, 2001; Schieman & Taylor, 2001; Rayle, 2005).

There have been some important attempts to refine the concept of mattering. Elliot, Kao, and Grant (2004) divided the three original components into two superordinate categories, with simple cognitive awareness (attention) separated from importance and reliance. The latter two they distinguish as being elements that imply a bi-directional relationship with another person. Alternatively, France and Finney (2009; 2010) argue

that ego-extension should be considered a separate dimension from importance, showing evidence that the two concepts relate differently to some limited external criteria. Rayle and Chung (2007) employed a measure that separately assessed mattering to parents, a significant other, friends, college, community, and society at large.

One of the most thorough critiques of the conceptualization and measurement of mattering has come from Marshall (Marshall, 1998, 2001). She began with a logical analysis of the construct as it was proposed by Rosenberg (1998), and highlighted ambiguities in terms of location (intra versus interpersonal), timing (episodic versus characteristic), and distinction between form and process (types of mattering versus elements that contribute to it). She proposed as an alternative the idea of *perceived mattering*, which she defines as, "the psychological tendency to evaluate the self as significant to specific other people" (Marshall, 2001, p. 474). In this articulation, she clarifies the construct as being an intrapersonal, cognitive attribute of an individual that embodies a typical self-evaluation that is inferred from interactions with significant others.

Important to this definition is the contingency of *perception* and reflexive assessment. It is not enough for the environmental indicators of attention, importance, and dependence to be present; they must also be noticed, internalized, and assigned meaning relevant to the self in order to evoke a sense of mattering. As she explains, "filtering processes such as selective attention, cognitive processing, and learned assignments of meaning to perceptions are likely to influence whether or not the individual notices the attending behaviours of the specific other person" (Marshall, 1998, p. 8). She also acknowledges

that perception does not need to equal reality; it is possible that an individual could interpret an action as being an indication that one matters, where it was not the intention of the actor. Role-taking ability is critical to an accurate assessment, as is a comparison of current events with expectations derived from previous experiences, cognitive schema, and social norms. Figure 2, drawn from Mak and Marshall (2004), presents their theoretical model of the formation and maintenance of perceived mattering.

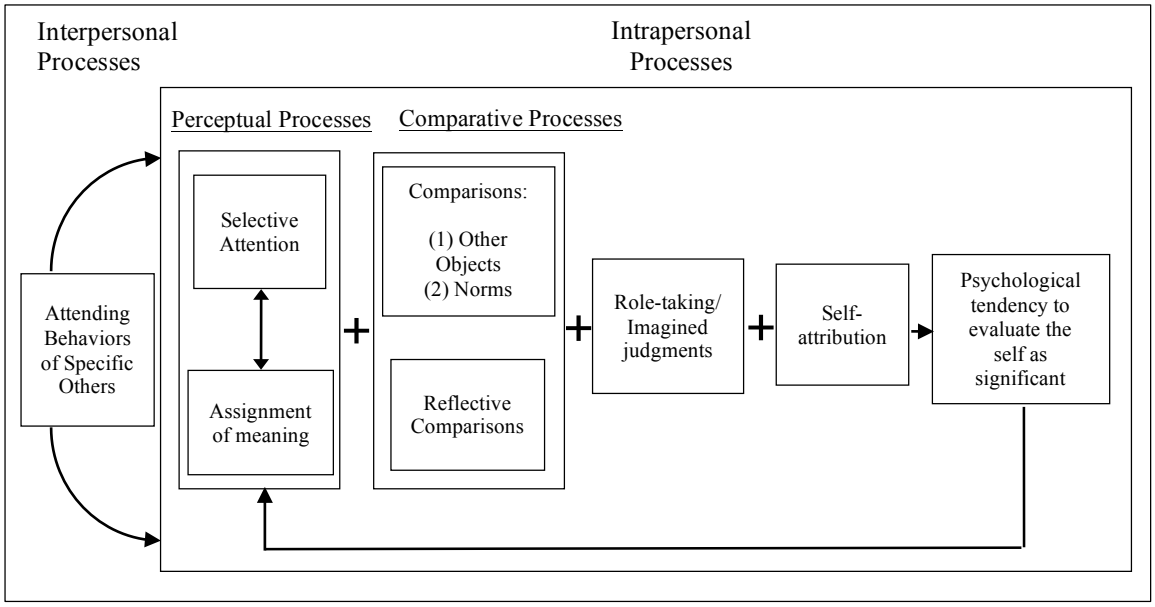

Figure 2: Theoretical model of the formation and maintenance of perceived mattering

Note. From "Perceived mattering in young adults' romantic relationships," by L. Mak and S. K. Marshall, 2004, *Journal of Social and Personal Relationships, 21*(4), p. 471. Copyright 2004 by Sage Publications. Reprinted with permission.

Marshall's theoretical framework for perceived mattering offers the clearest integration with the tripartite identity model. As the conclusion of an intrapersonal process, it is most

clearly identifiable as an element of personal and/or social identity. For example, to the extent that mattering to one's parents is viewed as a defining element of the social role of "child", the perception of mattering to one's mother could contribute to a social identity as a son or daughter. Alternatively, the perception of mattering to a *specific* person might contribute to personal identity as part of a unique biography.

Ultimately, to the extent it is validated in ongoing social interactions, a sense of perceived mattering should contribute to the strength of the ego. As Côté and Levine (2002) explain with regard to ego identity,

> *This ego quality develops on the basis of effective and meaningful social functioning and is initially dependent on the quality of recognition and support the individual receives from his or her community at the level of objective forms of personal and social identity. A supportive community engages the individual in a complex of personal and social roles, which consequently validates the identity of the ego, giving its strength to further engage the environment. (p. 94)*

According to Marshall, perceived mattering serves two possible functions: to provide a sense of belonging and social connectedness, and to provide a sense of meaning or purpose for life (Marshall, 2001). These outcomes could be seen as the result of the ego reflecting on, and generalizing from, the content of personal and social identities that have incorporated and validated the perception of mattering. Indeed, this accords with Erikson's (1968) suggestion that the most obvious results of an "optimal" sense of identity are, "a feeling of being at home in one's body, a sense of 'knowing where one is going,' and an inner assuredness of anticipated recognition from those who count" (p. 165).

The Mattering to Others Questionnaire (MTOQ) was developed to measure perceived mattering to mothers, fathers, and friends, and was validated using two different groups

of youth (Marshall, 2001). Females reported higher levels of mattering overall, and to their mothers and friends in particular. Both genders felt they mattered more to their mothers than their fathers. Older respondents also felt they mattered more than younger teens. Interestingly, undergraduates reported higher levels of mattering for fathers than for friends, but the reverse was true for high school students.

Mattering was also distinguishable from measures of self-esteem, though the two constructs were low to moderately correlated. Predicted positive relationships were found with measures of relatedness and purpose for life, which provides support for the two proposed functions of mattering, though conclusions of causality cannot be drawn from correlational analyses. Additionally, measures of social support were highly correlated with mattering, which suggests that more research needs to be done to distinguish the two concepts. Parental acceptance and joint decision-making were positively associated, though the effect of joint-decision making with fathers was not significant for females. Further, the relationship between maternal rejection and mattering was negative and linear, while the relationship with paternal rejection was curvilinear. Mattering increased at low levels of paternal control, but became negatively associated at higher levels.

This framework has since been used in other studies that have served to differentiate the specific referent model of the MTOQ from a measure of general mattering (Rayle, 2005), and have extended it to romantic relationships (Mak & Marshall, 2004), and parent's perceptions of mattering to their children (Marshall & Lambert, 2006). Finally, a longitudinal analysis of university students showed a declining trend in the perception of mattering to mothers over time, while the perception of mattering to fathers and friends

remained stable. Female respondents showed a significantly higher level of mattering than males, and students who were living with friends reported mattering more to them (Marshall, 2010).

Surprisingly, no peer-reviewed studies to date have explored the relationship between any of the measures of mattering and an explicit measure of identity. This is despite the strong association between mattering and the self that is expressed in all of the theoretical approaches to the construct (Elliott et al., 2004; France & Finney, 2009; Marshall, 2001; Rosenberg & McCullough, 1981).

At a foundational level, stable and significant personal and social identities should provide strength to the ego for further self-exploration (Côté & Levine, 2002). Apart from the work of Erikson described in the preceding paragraphs, this premise is also supported by attachment theory. While best known for studies of secure attachment between mothers and infants, more recently researchers have been developing a corresponding concept labelled "security of exploration" (Grossmann, Grossmann, Kindler, & Zimmermann, 2008). These investigators argue that secure attachment fosters secure exploration at all ages, and leads to "psychological security" that enables autonomy while maintaining relatedness. They suggest that,

> *Adolescents with an autonomous state of mind regarding attachment thus have more emotional and cognitive resources available to invest in stage-salient tasks, such as adjusting to and succeeding in the social and cognitive challenges presented by committed friendships and by institutions of formal learning… freedom to explore the external and internal worlds is an important marker of security across the lifespan. (p. 859)*

From their review of the attachment research, they determine that sensitive support from parents promotes "psychological security", which includes secure exploration that has a

social orientation. They argue that, "a psychologically secure person, in contrast to an insecure person, is able to respond appropriately to a wider variety of challenging situations and emotional states, while keeping the goal of cooperative partnership in mind" (p. 874). Integrating theories of attachment and identity status in a study of late adolescents, Benson, Harris, and Rogers (1992) found that attachment to mothers was related to identity achievement, while attachment to mothers and fathers functioned as protective factors against identity moratorium and diffusion. In summary, both Erikson's work and that of attachment theory would suggest that to the extent a perception of mattering functions as a source of stability and support, it should enable further identity exploration and development.

The next section places perceived mattering, parenting style, and identity style into the framework of the multidimensional model of identity, and will suggest hypotheses to be investigated in the remainder of the study.

1.5 Synthesis and Hypotheses

Parenting style and the family environment reflect elements of the social context in which a sense of identity first appears. For Erikson, the foundation of a mature identity is laid in infancy to the extent that mothers nurture their children by instilling a sense of trust that will undergird the developmental stages to follow. As he explains, "While the end of adolescence thus is the stage of an overt identity *crisis*, identity *formation* neither begins nor ends with adolescence: it is a lifelong development largely unconscious to the individual and to his society. Its roots go back all the way to the first self-recognition: in the baby's earliest exchange of smiles there is something of a *self-realization coupled*

with a mutual recognition (Erikson, 1960, p. 47). Familial relationships impact both the structure and process of identity. The development of a "theory of mind" begins in preschool, and the ability to discern, and eventually to reflect upon, our own subjective experience evolves into adolescence and beyond as cognitive and emotional skills mature (Durkin, 1995). A nurturing parental environment is one that provides support for the exploration of self and experience while maintaining a balance of connection and belonging. The childhood milieu also provides the initial elements of self-schema, which will be altered through assimilation and accommodation as the reflexive process of identity formation proceeds. By adolescence, an individual will have accumulated a set of social roles and personal experiences that will be both enabling and constraining. Relationships with parents are significant in this regard.

One way of viewing parenting style is as a contributor to different forms of "identity capital". Côté (1996b, 1997) argues that the process of identity formation is becoming progressively individualized in the late-modern era, and as a result, people's ability to "invest in who they are" is increasingly consequential. He explains, "the basic requirement for the acquisition of identity capital involves the utilization of resources by means of various (conscious and unconscious) strategies and, over time, the gains made through these efforts can become resources for further exchange" (Côté, 2002, p. 120). Identity capital resources can be either tangible or intangible. Examples of "intangible" resources include psychosocial strengths and cognitive abilities that have been associated with a nurturing parental environment. An assessment of parenting style, therefore, can provide helpful insight into the resources that individuals may, or may not, have at their

disposal when they encounter challenges to their identity during the developmental process. Two forms of intangible identity capital that might arise from a nurturing parental environment are the informational identity style (because of its agentic qualities) and a perceived sense of mattering (because of its importance as a basis of social capital).

The multidimensional model of identity development, introduced in Section 1.1, provides a useful tool for conceptualizing both identity style and perceived mattering. That model captures well the iterative nature of identity formation, and the constant interplay between process and structure in identity development. An identity style orientation, and the sense that one matters, represent subjective components of identity, and reflect aspects of the ego's synthetic and executive process that, when reflexively objectified, can become structural elements of the personal, social, and ego identities. As Levine (2003) explains,

> *Identity formation can be conceptualized as an ongoing psychosocial process during which various characteristics of the self are internalized, labeled, valued, and organized. When coordinated with self-awareness, these cognitive (self) schemas constitute the various identities one has and displays to others during social interaction. If identity formation is conceived in this way, the concept of structure can refer to the organization of schema contents (i.e., their integration and differentiation) as well as to the cognitive operational processes employed by the ego to form and sometimes change these schemas in response to the reactions of others. (p. 191)*

Perceived mattering involves the coordination of a number of different cognitive skills, as discussed in Section 1.4. In contrast, an identity style refers to a more general approach to processing self-relevant information, which could include data and abilities relative to mattering. From this perspective, the perception of mattering forms one component of the self-theory toward which an identity style might be oriented. Parenting style and the family environment provide a context of interaction in which personal and social

identities are validated or challenged, and in which the ego's executive and synthetic abilities first develop. The attentive behaviours associated with different styles of parenting present opportunities for a perception of mattering to arise. Figure 3 shows how parenting style, identity style, and perceived mattering can be incorporated into the multidimensional model of identity.

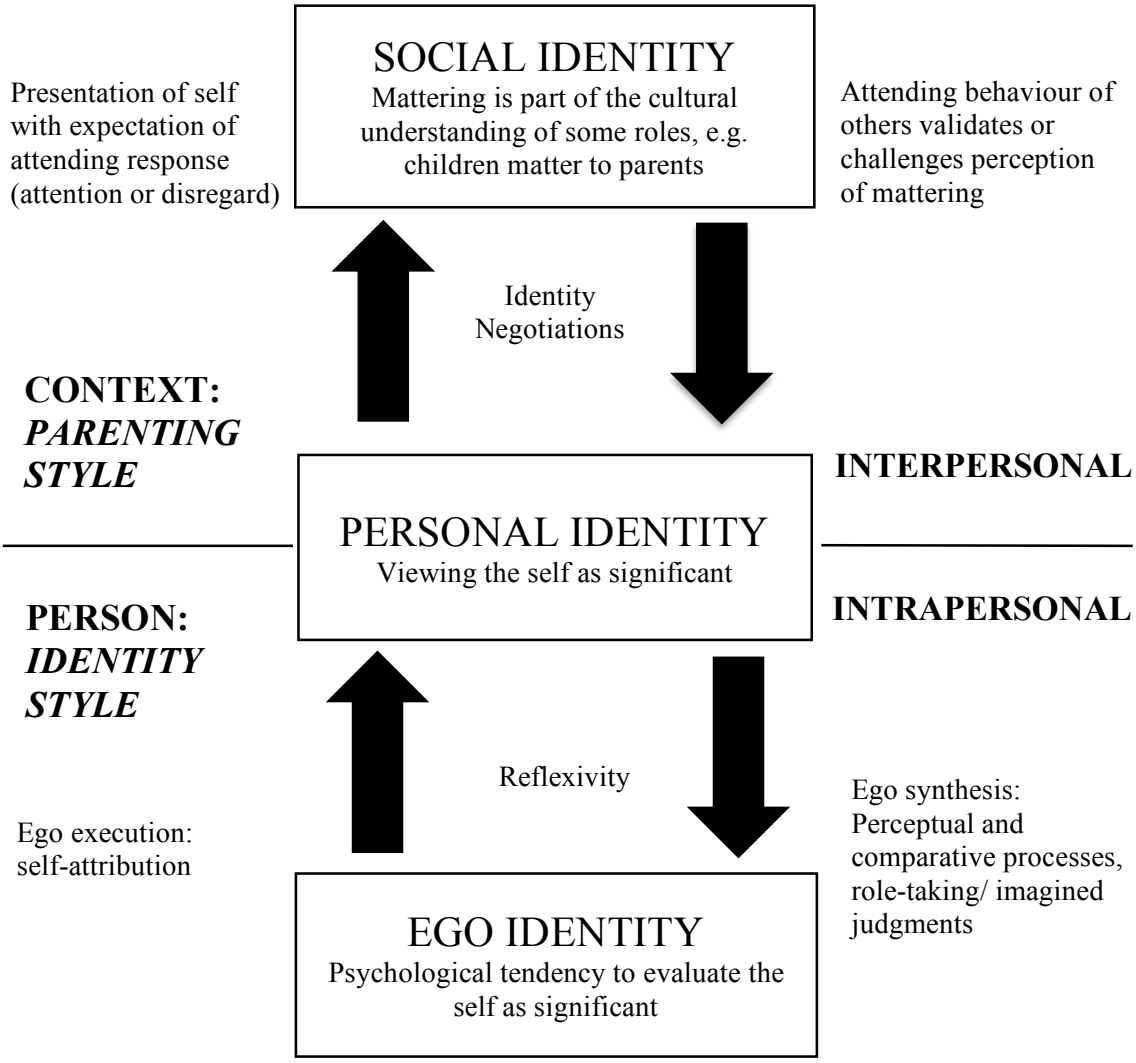

Figure 3: Multidimensional model of identity and perceived mattering

Note. From *Identity formation, agency, and culture: A social psychological synthesis* (p. 135), by J. E. Côté & C. Levine, 2002, Hillsdale, NJ: Lawrence Erlbaum. Copyright 2002 by Lawrence Erlbaum Associates, Inc. Adapted with permission.

Drawing from this, and the information presented in the previous sections, the following hypotheses can be made regarding the interrelationship among these constructs:

Hypothesis (set) 1. A nurturing parenting style will provide stability for the personal and social identities which will afford security for further identity exploration, manifest in an association with the information-oriented identity style; however, a caring environment that does not encourage exploration may also be associated with a normative style. Where the dimension of autonomy support cannot be distinguished from parental warmth or affirmation, a nurturing parenting style will be associated with both the informational and normative identity styles. Uninvolved or rejecting parenting styles will be positively associated with a diffuse identity style, and negatively associated with a normative identity style.

Hypothesis 2. A child's assessment of parenting style should be more strongly associated with identity style and perceived mattering than a parental assessment alone.

Hypothesis 3. The perception of mattering will be positively associated with the normative and information-oriented identity styles, and negatively associated with the diffuse-avoidant identity style.

Two studies used to investigate these hypotheses will be discussed in the following chapters.

Chapter 2

2 NLSCY

This chapter is based on a longitudinal survey conducted by Statistics Canada, in which a group of children was assessed every two years from late childhood to early adulthood. Among the measures that were collected in the first few cycles were assessments of two parenting styles: nurturing and rejecting. Both the child and one of his or her parents (or the adult deemed the "person most knowledgeable") responded to the same set of questions, which presented an opportunity to examine differences between the two perspectives on parenting practices, and effects on later development. In mid-adolescence, the youth filled out the full identity style inventory, and in subsequent years they completed the emotional intelligence questionnaire, providing a window into their psychosocial functioning. This survey was used to address the hypotheses presented in the previous chapter that focus on the relationship between parenting style and identity style, as well as to examine the effect of these constructs on later outcomes.[1]

2.1 Sample

The National Longitudinal Survey of Children and Youth (NLSCY) is a nationally representative survey that collected data on a wide variety of biological, social, economic, and environmental factors influencing child and youth development (Statistics Canada, 2010). Participants were a probability sample of children selected predominantly from households that participated in Canada's Labour Force Survey (LFS). Data were collected every two years between 1994 and 2009, yielding 8 cycles. This analysis used data from cycle 2 (1996–97), cycle 4 (2000–2001), cycle 5 (2002–2003), and cycle 8

(2004–2005). The complete sample at cycle 2 included 16,903 children, with a longitudinal response rate of 79.1%. At cycle 4, a total of 15,632 children were surveyed, and the cumulative longitudinal response rate of children from the original cohort was 67.8%. By cycle 8, there were 15,056 children in the survey, and the cumulative longitudinal response rate was 52.7% for the original cohort (Statistics Canada, 2010). The survey excluded children residing in institutional settings, on First Nations reserves, and outside the 10 provinces.

All participants selected for this analysis were members of the initial cohort, and the same set of participants was used for each cycle. One of the primary dependent variables in the analysis, the Identity Style Inventory (ISI; Berzonsky, 1989), was only included in cycle 4 for those participants who were aged 16 to 17 (n = 1855). A very small number of households had more than one child in this age group (~3%), and in these cases one respondent was randomly selected for study to avoid cluster effects. 1307 individuals had a score for at least one scale of the identity style inventory. Longitudinal data were available in cycle 8 for 946 of these respondents, and this group formed the sample used for analysis. Data were provided by the youth for all cycles, as well as by the Person Most Knowledgeable (PMK) for cycle 2. Child respondents in this sample were aged 10 to 11 when the study started, and were 24–25 in Cycle 8. Population-weighted demographic information for the household, including characteristics of the PMKs and children, are presented in Table 1.

Table 1: Sample Characteristics of Children and PMKs in Cycles 2 and 8

Variable	Proportion
Child Characteristics - Cycle 2	
Age (mean, yrs)	12.4
Female	51.7%
Child Characteristics - Cycle 8	
Living with parents	34.6%
Current Educational Status	
In post-secondary	30.2%
Completed post-secondary in cycle 7 or 8	50.1%
Other	19.7%
Highest Level of Education attained*	
Some secondary	8.0%
Completed post-secondary	15.8%
Some post-secondary or other	15.4%
Completed community college, technical college, CEGEP or nurse's training	31.2%
Completed bachelors or graduate degree	29.6%
PMK Characteristics - Cycle 2	
Age (mean, yrs)	40.3
Female	91.3%
Biological mother	90.1%
Education	
Less than HS	13.2%

**Note:* This question was asked of respondents who were not in school in cycles 7 or 8, or who were post-secondary graduates not currently in school

Table 1: Continued

Variable	Proportion
High school	18.7%
Some post-secondary	28.0%
Completed community college, technical college, CEGEP or nurse's	40.1%
Employment	
Currently working	75.7%
Not currently working (<12 mo)	6.8%
Not currently working (>12 mo)	17.5%
Income	
< 30,000$	10.6%
30-60,000$	40.8%
>60,000$	48.6%
Marital Status	
Married/Common law	81.8%
Separated/Widowed/Divorced	15.5%
Never married	2.8%
Number of people in household (mean)	4.2
Number of children in household (mean)	2.2

**Note:* This question was asked of respondents who were not in school in cycles 7 or 8, or who were post-secondary graduates not currently in school

2.2 Measures

2.2.1 Parenting Style

According to Statistics Canada, the objective of the parenting scale included in the NLSCY is "to measure the parent's[/child's] perception of his/her relationship with his/her child[/parent]" (Statistics Canada, 1998). The scale was adopted from the Western Australia Child Health Survey, and was developed by Lempers, Clark-Lempers, and

Simons, based on the work of Schaefer and Roberts et al. (as cited in Statistics Canada, 1998). While the scale was designed to measure parental nurturance, rejection, and monitoring, a factor analysis on the responses of the full NLSCY sample yielded two factors: parental nurturance and parental rejection (Statistics Canada, 1998). If a limited number of items were missing, the missing values were imputed by Statistics Canada based on the response profile of the respondent and others in the sample, as well as the number of factors included in the analysis. Both the PMK and the child answered the scale separately.

Items were rated on a 5-point scale with the following anchors: Never, rarely, sometimes, often, and always. A complete list of items from both the parent and child versions of the scale is included in Appendix A. The nurturance scale ranged from 0 to 24, and the rejection scale ranged from 0 to 28, with higher scores reflecting a greater degree of nurturance or rejection. Statistics Canada provided Cronbach's alphas for each of the scales, calculated from the full survey sample after imputation. For the PMK reports, they found a value of .78 for the nurturance scale, and .75 for the rejection scale. The values for the children's reports were .86 and .70 for the nurturance and rejection scales, respectively (Statistics Canada, 1998). When Cronbach's alphas were calculated using items without imputation, limited to the sample used in this study, the value for the PMK report of nurturing was .76, and the value for the PMK report of rejection was .74. Analogous values for the children's reports were .86 and .71.

2.2.2 Family Functioning

The Family Functioning Scale was developed by researchers at the Chedoke-McMaster Hospital of McMaster University. Its aim is to provide a global assessment of family functioning (e.g., communication, behaviour, affect, etc.) and the relationship between parents or partners in the household. A list of the twelve items is included in Appendix B. Each item is measured on a 4-point scale, ranging from "strongly agree" to "strongly disagree". After the negatively worded questions are reverse-coded, a total score is attained, ranging from 0 to 36. A higher score reflects a greater degree of dysfunction. There was no imputation done for this scale, as the non-response rate was 1.9%. Cronbach's alpha was .88 for the full survey sample (Statistics Canada, 1998), as well as for the participants in this study. The family functioning items were answered by the PMK only, in cycle 2. To avoid confusion caused by the scoring and naming of this scale, it will be subsequently referred to as "family dysfunction".

2.2.3 Identity Style

The third version of the Identity Style Inventory (Berzonsky, 1989) was included for participants aged 16 and 17 in cycle 4. The inventory has 30 items, which were summed to create three subscales representing the normative orientation, the information orientation, and the diffuse-avoidant orientation. The ranges for the scales are 0 to 40, 0 to 44, and 0 to 36, respectively. Each item was answered on a 5-point scale, anchored by "Not like me at all" and "Very much like me". The complete list of items is included in Appendix C. For the full survey sample, Statistics Canada reports Cronbach's alpha for the normative-orientation scale as .64, .77 for the information-orientation, and .74 for the

diffuse-avoidant orientation (Statistics Canada, 2003). Similar values were found when calculations were based only on the participants in the study sample (normative: .65, informational: .73, diffuse-avoidant: .72).

2.2.4 Psychosocial Outcomes

Later psychosocial functioning was measured by proxy through the use of the Emotional Quotient Inventory Youth Version (EQ-i:YV; BarOn & Parker, 2000) and the Emotional Quotient Inventory Adult Version (EQ-i; BarOn, 2004), which were asked of participants in cycle 5 and 8, respectively. The EQ-i:YV and EQ-i are composed of 5 subscales, measuring the following dimensions of emotional intelligence: self-awareness and self-expression ("intrapersonal"), social awareness and interpersonal relationship ("interpersonal"), change management ("adaptability"), emotional management and regulation ("stress management"), and self-motivation and optimism ("general mood"). The inventory was not used to measure the construct "emotional intelligence" per se, but rather as a general indication of psychosocial development. The inventory was chosen by Statistics Canada due to its brevity, and the focus on social, personal, and emotional 'abilities', rather than behaviours (Statistics Canada, 2010, p.83). As such, the scale served as a face-valid measure of psychosocial health that could be used to asses longer-term outcomes.

Each item was rated on a 5-point scale. Anchors for the EQ-i:YV were "Rarely true of me", "Sometimes", "True of me", "Often true of me", and "Very often true of me". Anchors for the EQ-i were "Very seldom true or not true", "Seldom true", "Sometimes true", "Often true", and "Very often true or true". There are 15 items in the EQ-i:YV (3

per subscale) and 20 items in the EQ-i (4 per subscale). Negatively worded items were reverse-scored, such that a higher score on each subscale reflected positive psycho-social development. This study used a summary measure that aggregated scores on all of the subscales. Cronbach's alpha was .84 for the combined scale in cycle 8, based on the entire survey sample (Statistics Canada, 2010). Cronbach's alpha for the sub-sample used in this study was .81.[2] For a complete list of items in each scale, see Appendix D.

2.3 Statistical Analysis

2.3.1 Weighting

Statistics Canada provides longitudinal survey weights for each cycle of the NLSCY. These are probability weights that are post-stratified to match demographic estimates of the population, correcting for the complex survey design as well as cycle non-response (i.e. attrition) (Statistics Canada, 1998). The weights available for each cycle of the NLSCY adjust estimates for the longitudinal sample to represent the population in January 1995 when the survey began. A set of 500 bootstrap replica weights are also provided for each year of the study, which correct standard errors to account for the use of survey weights. All statistical tests in this study were conducted using the survey and bootstrap weights provided for cycle 8 of the sample. The use of these weights reduces the sample size to respondents who participated in cycle 8, but adjusts for the complex design of the survey, and helps to address concerns related to the potential bias caused by cycle non-response.

2.3.2 Missing Data and Sample Selection Bias

The sample of participants used in this study was selected based on two criteria: having a score on at least one of the ISI scales in cycle 4, and a score for the EIQ-i in cycle 8. Requiring responses in later years of the survey presents a possible concern that individuals who continued to participate in later cycles might differ from those who dropped out, in a way that might bias results. Furthermore, individuals who responded to these particular items might differ from the rest of the participants within a given wave.

To address the first concern, logistic regression analyses on demographic variables collected in cycle 2 were used to compare the individuals who were selected into the sample with the remainder of the children aged 12 or 13. The variables tested included the gender of the PMK and relationship to the child, the family structure (whether the child was living in a two parent family with at least one biological parent versus another configuration), the highest level of education attained by the PMK, work and marital status, and household income. The regressions were done first using unweighted data, followed by weighted analyses that controlled for the complex design of the survey using survey weights and bootstrapped variance estimates.

In the unweighted analysis, a significant difference was found for the work status of the PMK; however, this effect disappeared when the analysis was redone using weights that control for the complex design of the survey. The only significant difference that persisted in both the unweighted and weighted analysis was for income. Based on the weighted results, children from households with incomes greater than $60,000 had

greater odds of being in the study sample compared to children from households with incomes below $30,000 (*OR* = 1.83, *Bootstrap SE* = 0.49, *p* = .02).

Additional tests were conducted to address the second concern, that individuals who responded to the ISI and the EIQ-i might be different in an important way from the remainder of the participants who were still involved in the survey. First, participants who had a score on at least one of the ISI scales were compared with the remaining 16 and 17 year olds in cycle 4. With reference to the cycle 2 demographic variables, respondents had higher odds of having at least one ISI scale score if the PMK was female, and if she was the participant's biological mother; however, neither of these variables were significant when the data were weighted. The education level, work status, and household income of the PMK at cycle 4 were also tested, but no significant effects were found in either the unweighted or weighted analyses.

Demographic comparisons were also made between the final study sample and the remaining 24 and 25 year olds in cycle 8. In addition to the cycle 2 demographic variables, tests were also conducted on the following cycle 8 variables: living arrangement, current educational status, and the highest level of educational attained for those not currently in school. Only two variables were significant in the unweighted analyses. Individuals had higher odds of being in the sample if the PMK was female in cycle 2, and if they were currently attending or completed posts-secondary school in cycle 8. Neither of these variables was significant in the weighted regression.

Scores on the analytical variables included in this study were also tested for differences between the final sample and the rest of the 12 and 13 year olds at cycle 2, and the 24 and

25 year olds at cycle 8. In the unweighted tests comparing the study sample to the remaining 12 and 13 year olds in cycle 2, participants had increased odds of being in the study sample if they had higher scores on the child report of parental nurturing, and lower levels of family dysfunction. The significant association between selection into the sample and lower levels of family dysfunction also held in the unweighted analysis comparing the sample to the other 24 and 25 year olds in cycle 8. However, not one of the relationships was significant when the data were weighted. Scores on the ISI variables could not be tested, as virtually all 16 to 17 year olds who answered these questions were included in the study sample.

To summarize thus far, after the data were weighted to account for the complex survey design and cycle non-response, the participants selected into the study sample were more likely to come from households with higher incomes relative to other 12 and 13 year olds in cycle 2. Tests on the analytical variables used in this study found no significant results once weights were applied, though it should be noted that it was not possible to compare the study sample's scores on the ISI scales to other participants in the NLSCY. While it is possible that this limits the generalizability of the results of this study, it is reassuring that there were no significant demographic differences between the participants who answered the ISI and the rest of the age cohort at cycle 4, when the ISI was collected, once the survey weights were applied.

A related concern with survey data is partial non-response, which occurs when an individual participating in a particular year of the survey has missing responses for some items or components of the survey. Within the selected sample of participants, the rate of

missing data (partial non-response) differed by cycle and by variable. For the cycle 2 variables, less than five percent of the data were missing for the PMK assessments of parenting style and family functioning. Approximately 14% of the data were missing for the child reports of parenting style. As mentioned previously, Statistics Canada imputed values for these variables where appropriate, prior to distributing the dataset to the Research Data Centres. On account of the sample being selected primarily on the basis on having responded to the ISI measure, the amount of missing data for these scales was negligible. As is typical with longitudinal surveys, missing data were more pronounced in later cycles, with approximately 17% of the sample missing in cycle 5 (~10% cycle non-response). Less than five percent of the sample was missing data in cycle 8, due to the application of the cycle 8 survey weights when defining the subsample.

Five percent missing data is considered minimal, and in such cases, listwise deletion is generally an appropriate strategy (McKnight, McKnight, Sidani, & Figueredo, 2007). Binary indicator variables were created for all measures with missing data above this threshold, and logistic regression models were used to test for potential associations between "missingness" and values on the remaining study variables. Data were weighted using the cycle 8 survey weights, and bootstrap weights were used to calculate standard errors. Non-significant findings help to support the assumption that data is missing at random, though there is no test that can be conclusive on this matter (Acock, 2005). Each indicator variable was tested against the remaining study variables, and the only significant relationship was between missingness on the EIQ-i:YV in cycle 5 and family dysfunction. Higher levels of family dysfunction in cycle 2 were associated with greater

odds that a participant would be missing data on the EIQ-i:YV in cycle 5 (*OR* = 1.09, *Bootstrap SE* = 0.04, *p* = .03), though the increased odds were trivial in magnitude.

2.3.3 Procedure

To begin, the means and standard deviations of each scale were calculated, along with the bivariate correlations between each of the measures. As Stata is not able to test correlation coefficients with bootstrapped standard errors, each of the pairs of variables was tested in a set of regressions using the bootstrap weights, alternating which variable took the position as the predictor and outcome. The test statistic from the regression with the largest p-value was used as a conservative estimate of the significance of the correlation (Sribney, 2005).

In the first set of regression models, each of the identity style orientations was regressed separately on the parent and child reports of parenting style. Gender was initially included as a covariate, and, where significant, was then used to stratify the models. Subsequently, hierarchical regression models were used to assess the predictive utility of the child reports beyond those of the PMKs. Gender was entered in the first block of each regression, followed by family functioning in the second block, the PMK reports of parenting style in the third block, and the child reports of parenting style in the fourth. To test longer-term outcomes, hierarchical regression models were used to regress the EIQ-i summary scales from cycles 5 and 8 on the measures of parenting style, family functioning, and identity style. In the model for the cycle 8 outcome, the EIQ-i summary scale from cycle 5 was included as a control. Bootstrapped standard errors were calculated for all models.

The analysis of a hierarchical regression model typically involves an examination of the proportion of variability in an outcome that is explained by all of the predictors in the model (R^2), as well as the change in R^2 that occurs with the addition of each set of variables. When models are estimated with robust or bootstrapped standard errors, Wald tests are used to compare the nested models to identify which blocks of predictors make a significant contribution to the overall fit of the model. Regression coefficients for the predictor variables are also tested for significance, and are usually explored in both raw and standardized form. However, collinearity between predictors can make regression coefficients difficult to interpret, as shared variance can only be assigned to one measure. In cases where predictors are not entirely independent, it has been argued that both regression coefficients and structural coefficients should be examined (Courville & Thompson, 2001; Kraha, Turner, Nimon, Zientek, & Henson, 2012; Thompson & Borrello, 1985).

A structural coefficient, when squared, represents the proportion of the total explained variability in an outcome (i.e. R^2) that could be attributed to a given predictor in a model, without partialling out any overlapping variability with other independent variables (Kraha et al., 2012). Structural coefficients can be calculated by correlating each independent variable in a model with the values of the outcome predicted by that model ($\hat{Y}$), or by dividing the bivariate correlation of the predictor and criterion variables by the multiple correlation coefficient (R).

$$r_{S_{xi}} = r_{\hat{Y}i} = \frac{r_{YX_i}}{R_{Y \cdot 12 \ldots k}} \quad (1)$$

The beta coefficients of the predictors in a regression model represent the optimal combination of those variables for explaining a maximal amount of the variability in an outcome. Because a linear regression is an additive model, the amount of variability that is explained must be apportioned among the predictors. If some portion of the variability in the outcome could be attributed to more than one variable, the explanatory power of one variable may be assigned to another, and the regression coefficient of the first will be lowered. This can be misleading if one interprets a small beta coefficient to mean the predictor is irrelevant in explaining the outcome (Cohen & Cohen, 1983; Courville & Thompson, 2001).

If the independent variables are uncorrelated, then the standardized regression coefficients are equivalent to the bivariate correlations between the variables and the predicted outcome ($\hat{Y}$), and the sum of the squared correlations will equal the total amount of variability explained by the model (i.e. R^2). In this case the structure coefficients will rank order the predictors identically to the bivariate correlations and the beta weights (Courville & Thompson, 2001). However, this may not be the case if the predictors are intercorrelated, in which case it is informative to consider both the regression and structure coefficients. The structure coefficients provide similar information to the bivariate correlations, with the advantage of being framed in the context of a multivariate explanation (Thompson & Borrello, 1985).

2.4 Results

2.4.1 Univariate Analysis

Table 2 presents the means and standard deviations of the measures used in the analysis. Bootstrapped standard errors are provided in parentheses. The theoretical ranges are provided to give context to the estimates. A coefficient of variation (CV) is calculated from the ratio between the mean and standard deviation, and is a measure of dispersion that is comparable across scales with different units. In terms of parenting style, the average scores were similar for the PMKs and children, with both groups reporting a higher frequency of nurturing behaviours than rejecting behaviours. The PMK ratings of nurturing were slightly higher than those of the children, and the ratings of rejection were slightly higher for the children than the PMKs. The coefficients of variation showed more dispersion in scores on the rejection scales than on the nurturing scales, and to a similar degree with both respondents. The mean family dysfunction score was low given the possible range of the scale, though the coefficient of variation was 61.3, which was relatively high compared to the other measures in the analysis.

As the possible range of values is different for each of the ISI scales, the means are not directly comparable in terms of magnitude. However, the coefficients of variation indicate that scores on the diffuse-avoidant scale were more variable than those on the normative and information scales, and scores on the information scale were the least variable. The means of the EIQ-i summary scales were relatively high in both cycles 5 and 8, given the possible range of the measures, though there was less dispersion in

scores in cycle 8. A set of t-tests compared the means of each scale by gender, and no significant differences were found.

Table 2: Means and Standard Deviations of Scales in Cycles 2, 4, 5, and 8

Variable	Possible Range	Mean (*SE*)	*SD*	*CV*
Cycle 2				
Family Dysfunction	0-36	7.99 (0.30)	4.90	61.3
Nurturing - Child	0-24	18.53 (0.24)	4.22	22.8
Rejecting - Child	0-28	9.47 (0.26)	4.68	49.4
Nurturing - PMK	0-24	19.09 (0.13)	2.67	14.0
Rejecting - PMK	0-28	8.93 (0.23)	3.86	43.2
Cycle 4				
ISI - Informational	0-44	23.39 (0.40)	6.62	28.3
ISI - Normative	0-40	18.79 (0.30)	5.71	30.4
ISI - Diffuse/Avoidant	0-36	16.78 (0.42)	6.28	37.4
Cycle 5				
EIQ-i:YV	1-45	30.32 (0.40)	6.05	20.0
Cycle 8				
EIQ-i	1-80	61.00 (0.48)	8.64	14.2

Note: Bootstrapped Standard Errors in parentheses; CV=SD/Mean

2.4.2 Bivariate Correlations

Pairwise correlation coefficients are presented in Table 3 for all measures included in the analysis. Correlations greater than .50 are considered large, those greater than .30 are considered medium, and those greater than .10 are small (Acock, 2010; Cohen, 1992). Any correlations less than .10 are considered trivial, particularly with a large sample size. Gender was only weakly correlated with the other variables in the study; girls had lower scores on the child report of rejecting behaviour and the diffuse-avoidant identity style, and higher scores on the EIQ-i in cycle 8. The correlation with higher levels of family dysfunction was weak, with lower scores on both the PMK and child reports of parental nurturing, and with higher scores on the PMK report of parental rejection.

Surprisingly, the correlations between the PMK and child reports of parenting style were small, though in agreement in the sense that the PMK and child reports of rejection were positively associated, as were the two respondent's reports of nurturing. Reports of nurturing behaviour were negatively associated with reports of rejecting behaviour, both within and between the PMKs and children. The identity style orientations were most strongly associated with the child reports of parenting style, though the correlations were still relatively small in size. In general, the diffuse-avoidant style was positively associated with parental rejection, and negatively associated with parental nurturing. The informational and normative identity orientations were positively correlated with parental nurturing, but had no significant association with parental rejection. These identity orientations also had a large positive correlation with one another ($r = .53$, $p = .001$).

Table 3: Bivariate Correlations Between Demographic Variables, Measures of Parenting Style, Identity Style Orientation, and Psychosocial Outcomes

Variable	1	2	3	4	5
1. Female	1				
2. Family Functioning	-.03	1			
3. Nurturing - PMK	.18	-.27***	1		
4. Rejecting - PMK	-.02	.19**	-.41***	1	
5. Nurturing - Child	.06	-.20**	.18***	-.10	1
6. Rejecting- Child	-.14*	.07	-.16***	.20***	-.38***
7. ISI - Informational	.10*	-.09	.11*	-.09	.26*
8. ISI - Normative	.05	-.07	.12**	-.06	.27***
9. ISI – Diffuse/Avoidant	-.20***	.11	-.11*	.12*	-.15*
10. Cycle 5 EIQ-i:YV	.04	-.12	.10	-.10	.32***
11. Cycle 8 EIQ-i	.12*	-.07	.14**	-.11*	.21***

Variable	6	7	8	9	10	11
7. ISI - Informational	-.08	1				
8. ISI - Normative	-.10	.53***	1			
9. ISI – Diffuse/Avoidant	.21***	-.07	.07	1		
10. Cycle 5 EIQ-i:YV	-.16**	.29***	.24***	-.19**	1	
11. Cycle 8 EIQ-i	-.16**	.21***	.23***	-.22***	.41***	1

Note: * $p < .05$, ** $p < .01$, *** $p < .001$

In terms of the EIQ-i outcome measures assessed in cycles 5 and 8, higher scores were positively associated with the child reports of parental nurturing, as well as the normative and information-oriented identity styles. The diffuse-avoidant identity style, along with

the child reports of parental rejection, were negatively associated with the outcomes. The EIQ-i:YV in cycle 5 was moderately correlated with the EIQ-i in cycle 8.

2.4.3 Hierarchical Regression Models

Identity Style Regression Models

Table 4 shows the regression of each identity style orientation on the child reports of the nurturing and rejecting parenting styles. Gender was included in each of the models as a covariate. Nurturing was the only significant predictor of the informational and normative styles, while the diffuse-avoidant orientation was associated with boys and the perception of a rejecting parenting style. Because of the significant main-effect of gender, the diffuse-avoidant model was stratified (see Appendix E). Results showed that this orientation was associated with reports of lower levels of nurturing in girls ($\beta = -.23$, $p = .05$), and reports of higher levels of rejection in boys ($\beta = .25$, $p = .05$).

The same set of regression models was run using the PMK reports of parenting style (see Table 5). None of the variables significantly predicted the informational identity style. Parental nurturing was positively associated with the normative style. Similar to the models with the child reports, gender was a significant predictor of the diffuse-avoidant orientation, and stratified models showed that a rejecting parenting style was positively associated with that identity style in boys ($\beta = .24$, $p = .05$; see Appendix F). However, neither of the parenting variables, as assessed by the PMK, was significantly associated with the diffuse-avoidant orientation for girls.

Table 4: Regression of Child Reports of Parenting Style on Identity Style Orientation

Variable	*B*	*SE*	β
		Informational	
Female	1.37	0.81	.11
Nurturing	0.40**	0.14**	.26**
Rejecting	0.04	0.13	.03
Constant	14.93***	2.91***	
F	13.75***		
R^2	0.08		
		Normative	
Female	0.21	0.63	.02
Nurturing	0.37***	0.10***	.27***
Rejecting	0.00	0.08	.00
Constant	11.95***	2.38***	
F	15.9***		
R^2	0.07		
		Diffuse/Avoidant	
Female	-2.45**	0.77**	-.19**
Nurturing	-0.14	0.13	-.10
Rejecting	0.21*	0.09*	.15*
Constant	18.67***	2.83***	
F	21.2***		
R^2	0.09		

Note. * $p < .05$, ** $p < .01$, *** $p < .001$

Table 5: Regression of PMK Reports of Parenting Style on Identity Style Orientation

Variable	*B*	*SE*	β
		Informational	
Female	1.21	0.69	.09
Nurturing	0.18	0.14	.07
Rejecting	-0.10	0.12	-.06
Constant	20.16***	3.28***	
F	8.83*		
R^2	0.02		
		Normative	
Female	0.32	0.59	.03
Nurturing	0.24*	0.12*	.11*
Rejecting	-0.02	0.09	-.01
Constant	14.11***	2.89***	
F	7.75*		
R^2	0.02		
		Diffuse/Avoidant	
Female	-2.56***	0.70***	-.21***
Nurturing	-0.07	0.15	-.03
Rejecting	0.17	0.11	.10
Constant	17.77***	3.16***	
F	21.43***		
R^2	0.06		

Note. * p < .05, ** p < .01, *** p < .001

It is notable that while the results reported above were statistically significant, the coefficients are small. When standardized, the size of a regression coefficient (or a partial regression coefficient) can be judged by the same criteria as a correlation coefficient (i.e. thresholds for small, medium, and large effects are .10, .30, and .50 respectively; (Cohen, 1992)). The amount of variability explained by each model was also low, albeit higher for the child reports (7–9%) than for the PMK reports (2–6%). Cohen's thresholds for assessing the size of a squared multiple correlation coefficient (i.e. R^2) are .0196 for a small effect, .1304 for a medium effect, and .2592 for a large effect (Cohen, 1992, p. 159).

In the first set of hierarchical models, each of the identity style orientations was regressed on four blocks of predictors. Results from the final models are shown in Table 6, and all models are included in Appendices G, H and I. In the model predicting the informational style, the first block controlling for gender was significant, but the only set of predictors that contributed substantially to the amount of explained variability was the final block containing the child reports of parenting style ($F = 16.05$, $p = .01$, $R^2 = .08$, $\Delta R^2 = .05$). The child report of parental nurturing was the only significant variable. An examination of the structural coefficients showed that the child's report of parental nurturing was able to account, by itself, for 80.7% of the total amount of variability explained by the model ($r_S = .90$). A similar pattern of results was observed for the normative style; the block containing the child reports led to the only significant rise in the R^2 of the model ($F = 20.39$, $p = .00$, $R^2 = .07$, $\Delta R^2 = .06$). As with the informational style, the child report of

parental nurturing was predictive of a more normative orientation, and its structural coefficient confirmed its importance relative to the other variables in the model.

In the final model, gender was a significant predictor when it was entered alone in the first block (β = –.23, p = .001; F = 14.66, p = .000, R^2 = .054), with boys having higher diffuse-avoidant scores than girls. Gender remained the only significant variable when the remaining blocks of predictors were added, although the addition of the child reports of parenting style did result in a significant rise in explanatory power (ΔR^2 = .03). Furthermore, while the structural coefficient for gender was the largest among the set of independent variables (r_S = –.73), the coefficients for the child reports of parental nurturing and rejection were also relatively high (r_S = –.53 and r_S = .63 respectively). This suggests that there is some overlap in the amount of variability in the diffuse-avoidant identity style that could be attributed to gender or to the parenting scores, or that the effect of parenting style might be mediated by gender.

When the final regression model was run segregated by gender, the rejecting parenting style was significantly associated with the diffuse-avoidant identity style for boys (see Appendix K). The PMK report of rejecting was significant in the second block (β = .21, p = .05; F = 9.73, p = .02), though it lost significance when the child reports were added in the third (child report of parental rejection: β = .22, p = .05; F = 19.9, p = .00).

Table 6: Summary of Final Models for Hierarchical Regression Analyses Predicting Identity Style Orientation

Variable	*B*	*SE*	β	*SC*
			Informational	
Female	1.31	0.78	.10	.45***
Family Functioning	-0.02	0.08	-.01	-.29***
Nurturing - PMK	0.12	0.16	.05	.44***
Rejecting - PMK	-0.03	0.11	-.02	-.21***
Nurturing - Child	0.37**	0.15	.24**	.90***
Rejecting - Child	0.04	0.12	.03	-.32***
Constant	13.47**	4.56		
F	16.05**			
R^2	0.08			
			Normative	
Female	0.13	0.64	.01	.16*
Family Functioning	-0.01	0.07	-.01	-.29***
Nurturing - PMK	0.13	0.13	.06	.41***
Rejecting - PMK	0.03	0.09	.02	-.13*
Nurturing - Child	0.33**	0.11	.25**	.97***
Rejecting - Child	-0.01	0.08	-.01	-.42***
Constant	9.94**	3.79		
F	20.39***			
R^2	0.07			

*Note: * p < .05, ** p < .01, *** p < .001; SC= structural coefficient (bivariate correlation between x and y-hat); Standard Errors are bootstrap weighted estimates*

Table 6: Continued

Variable	*B*	*SE*	β	*SC*
		Diffuse/Avoidant		
Female	-2.66***	0.78	-.21***	-.73***
Family Functioning	0.09	0.11	.07	.37***
Nurturing - PMK	0.04	0.18	.02	-.32***
Rejecting - PMK	0.11	0.12	.07	.35***
Nurturing - Child	-0.13	0.13	-.09	-.53***
Rejecting - Child	0.17	0.09	.12	.63***
Constant	16.24**	5.21		
F	32.77***			
R^2	0.10			

*Note: * p < .05, ** p < .01, *** p < .001; SC= structural coefficient (bivariate correlation between x and y-hat); Standard Errors are bootstrap weighted estimates*

It is notable that while only the child report of parental rejection was a significant predictor in the final model, the change in R^2 between blocks two and three was not significant. This suggests that, while the child report does a slightly better job of accounting for variability in the diffuse-avoidant identity style than the parent report, ultimately it is the common variance of the two reports of parental rejection in general that is associated with diffuse-avoidance. In contrast, lower scores on the child report of parental nurturing was associated with higher scores on the diffuse-avoidant scale for girls ($\beta = -.25$, $p = .05$; see Appendix J). While the final model was not significant at the .05 level ($F = 9.72$, $p = .08$), there was a significant increase in the amount of variability

explained by the child reports as compared to those of the PMK (ΔR^2 =.06, F = 5.93, p = .05).

EIQ-i:YV Cycle 5 Models

The five-factor summary scale of the EIQ-i:YV measured in cycle 5 was regressed on five blocks of predictors, first for the entire sample, and then segregated by gender (see Table 7 for the final models, and Appendix L, M, and N for complete results). The first four blocks were the same as those used above: gender, family dysfunction, the PMK reports of parental nurturing and rejecting, and the child reports of parental nurturing and rejecting. The fifth block added the three identity style orientations.

The addition of the child reports of parenting style and the identity style variables provided small, but significant, increases in explanatory power. The final model predicted 20% of the variability in the EIQ-i:YV, with the child report of parental nurturing (β = .24, p = .001), the information identity style (β = .19, p = .01), and the diffuse-avoidant identity style (β = –.19, p = .01) making significant unique contributions. The relevance of these three variables was also reflected in their structural coefficients, which were .75, .68, and –.48 respectively.

Comparing the stratified models, family functioning was initially significant when added to the model for girls, but the effect was reduced to nonsignificance when other variables were added. For both genders, the blocks containing the child reports of parenting style and the identity style scores significantly increased the amount of variability explained by the models. The child's report of parental nurturing was significant for both, but findings for the identity styles diverged. For boys, the normative and diffuse identity styles both

made significant unique contributions, albeit in a positive direction for the normative style, and a negative direction for the diffuse-avoidant style. In contrast, it was the informational identity style that made a unique positive contribution for girls. However, it should be noted that the structural coefficients indicate that the diffuse-avoidant style has a strong association with the outcome for girls, as does the informational style for boys. The absence of significant regression coefficients for these variables suggests that other predictors in the models are accounting for their effects. That being said, the structural coefficients also underscore the importance of the child reports of parental nurturing for both genders, as well as the informational style for girls, and the normative style for boys. The decline in the size of the coefficient for the child report of parental nurturing when the identity style variables were added suggests that the effect of parental nurturing on the cycle 5 outcome is at least partially mediated by identity style.

Table 7: Summary of Final Models for Hierarchical Regression Analyses Predicting EIQ-i:YV in Cycle 5, Stratified by Gender

Variable	*B*	*SE*	β	*SC*
			All	
Female	-0.98	0.69	-.08	.04
Family Functioning	-0.02	0.08	-.02	-.32***
Nurturing - PMK	0.02	0.14	.01	.26***
Rejecting - PMK	-0.05	0.09	-.03	-.21***
Nurturing - Child	0.35***	0.10	.24***	.75***
Rejecting - Child	0.00	0.07	.00	-.34***
ISI - Informational	0.18**	0.06	.19**	.68***

Note. * p < .05, ** p < .01, *** p < .001; SC = structural coefficient (bivariate correlation between x and y-hat); Standard Errors are bootstrap weighted estimates

Table 7: Continued

Variable	*B*	*SE*	β	*SC*
ISI - Normative	0.07	0.06	.06	.50***
ISI - Diffuse	-0.19**	0.06	-.19**	-.48***
Constant	22.45***	4.10		
F	74.94***			
R^2	0.20			
			Females	
Family Functioning	-0.06	0.09	-.06	-.36***
Nurturing - PMK	-0.02	0.18	-.01	.20*
Rejecting - PMK	-0.06	0.12	-.04	-.18*
Nurturing - Child	0.32*	0.13	.22*	.70***
Rejecting - Child	-0.01	0.11	-.01	-.32**
ISI - Informational	0.31***	0.08	.33***	.79***
ISI - Normative	-0.08	0.07	-.08	.24*
ISI - Diffuse	-0.14	0.08	-.14	-.49***
Constant	22.17***	5.30		
F	36.63***			
R^2	0.25			
			Males	
Family Functioning	0.10	0.13	.07	-.22**
Nurturing - PMK	0.08	0.22	.03	.29***
Rejecting - PMK	-0.04	0.15	-.02	-.22*
Nurturing - Child	0.36*	0.14	.24*	.70***
Rejecting - Child	0.04	0.10	.03	-.31**
ISI - Informational	0.01	0.11	.01	.50***

Note. * $p < .05$, ** $p < .01$, *** $p < .001$; SC = structural coefficient (bivariate correlation between x and y-hat); Standard Errors are bootstrap weighted estimates

Table 7: Continued

Variable	*B*	*SE*	β	*SC*
ISI - Normative	0.30*	0.13	.27*	.70***
ISI - Diffuse	-0.27**	0.10	-.26**	-.41**
Constant	20.38**	6.35		
F	40.08***			
R^2	0.21			

Note. * p < .05, ** p < .01, *** p < .001; SC = structural coefficient (bivariate correlation between x and y-hat); Standard Errors are bootstrap weighted estimates

EIQ-i Cycle 8 Models

The same models that were used with the cycle 5 EIQ-i scales were also tested using the versions from cycle 8. Results are shown in Table 8 and Appendices O, P and Q. The only adjustment was the addition of a sixth block to each model, containing the cycle 5 score on the EIQ-i:YV.

Looking at the model for all participants in cycle 8, all blocks of predictors significantly increased the amount of variability explained by the model, with the exception of the family dysfunction score. After the previous version of the scale was controlled in the final block, the normative and diffuse-avoidant identity styles were still predictive of scores on the EIQ-i. The child report of parental nurturing lost significance, despite having one of the highest structural coefficients among the final set of variables (r_s = .51), and being a significant predictor of the cycle 5 version of the scale. This suggests that its effect may have been accounted for in the cycle 8 model by its correlation with the cycle 5 outcome. This may have also been the case with the informational identity style, which was a significant predictor of the cycle 5 scale, but not the cycle 8 version. In contrast,

the normative style was only significant in cycle 8, both before and after the cycle 5 variable was added. The diffuse-avoidant identity style was significant in both the cycle 5 and cycle 8 final models. Gender was significant until the identity style variables were added to the model. The relationships between the cycle 5 EIQ-i:YV and the remaining predictor variables were clarified when the models were run with the cycle 5 variable is added in the first block (see Appendices R, S, and T). Controlling for the EIQ-i:YV, gender was still significant until the identity style variables were added to the model. The child report of parental nurturing was not significant in any block, suggesting that the effect of this variable was accounted for by gender and the cycle 5 variable. Ultimately, the final set of predictors explained 26.5% of the variability in the EIQ-I at cycle 8.

Stratified models demonstrated that the effect of the diffuse-avoidant identity style was accounted for by scores on the cycle 5 EIQ-i:YV for girls, whereas the EIQ-i:YV accounted for the effect of the normative style for boys. Effects of the child report of parental nurturing, and the information-oriented identity style, were accounted for, or mediated, by the cycle 5 variable for both genders. Controlling for the EIQ-i:YV, the normative identity style was a significant predictor of the cycle 8 outcome for girls, whereas the diffuse-avoidant identity style was a significant predictor for boys. The relationship between the diffuse-avoidant style and later outcomes for boys is particularly interesting, since that identity style was a significant predictor in both cycles 5 and 8.

Table 8: Summary of Final Models for Hierarchical Regression Analyses Predicting EIQ-I in Cycle 8, Stratified by Gender

Variable	*B*	*SE*	β	*SC*
			All	
Female	1.58	0.89	.09	.29***
Family Functioning	0.12	0.11	.07	-.14*
Nurturing – PMK	0.12	0.19	.04	.30***
Rejecting – PMK	-0.15	0.16	-.07	-.24***
Nurturing – Child	0.12	0.13	.06	.51***
Rejecting – Child	-0.04	0.11	-.02	-.34***
ISI – Informational	0.00	0.09	.00	.47***
ISI – Normative	0.30**	0.11	.20**	.54***
ISI – Diffuse	-0.20**	0.08	-.15**	-.44***
EIQ Cycle 5	0.45***	0.08	.32***	.82***
Constant	40.21***	5.10		
F	80.42***			
R^2	0.27			
			Females	
Family Functioning	0.17	0.14	.10	-.04**
Nurturing – PMK	0.14	0.23	.04	.25***
Rejecting – PMK	-0.18	0.20	-.08	-.25***
Nurturing – Child	0.12	0.16	.06	.51***
Rejecting – Child	-0.02	0.15	-.01	-.29***
ISI – Informational	0.00	0.11	.00	.50***

Note. * p < .05, ** p < .01, *** p < .001; SC = structural coefficient (bivariate correlation between x and y-hat); Standard Errors are bootstrap weighted estimates

Table 8: Continued

Variable	*B*	*SE*	β	*SC*
ISI - Normative	0.25*	0.12	.16*	.46***
ISI - Diffuse	-0.14	0.09	-.10	-.39***
EIQ Cycle 5	0.47***	0.11	.31***	.85***
Constant	40.46***	6.44		
F	48.71***			
R^2	0.19			
			Males	
Family Functioning	0.06	0.14	.04	-.20*
Nurturing - PMK	0.12	0.32	.04	.27***
Rejecting - PMK	-0.08	0.21	-.04	-.25**
Nurturing - Child	0.14	0.19	.07	.49***
Rejecting - Child	-0.04	0.16	-.02	-.33***
ISI - Informational	-0.01	0.14	-.01	.41***
ISI - Normative	0.37	0.21	.25	.62***
ISI - Diffuse	-0.28*	0.12	-.21*	-.41***
EIQ Cycle 5	0.43***	0.12	.33***	.84***
Constant	41.14***	7.74		
F	36.40***			
R^2	0.33			

Note. * p < .05, ** p < .01, *** p < .001; SC = structural coefficient (bivariate correlation between x and y-hat); Standard Errors are bootstrap weighted estimates

2.5 Summary and Limitations

This chapter examined the relationship between parenting style and the identity style orientations using data collected from participants in their early teens through their mid-twenties. Reports of nurturing and rejecting parenting styles were collected from young participants in early adolescence, as well as from a parent or "person most knowledgeable" (the biological mother for 90.1% of the sample). This allowed for the relative importance of the youth's assessments to be examined. Both the adults and adolescents reported more nurturing than rejecting parenting behaviours, and most of the respondents came from homes with a low amount of family dysfunction.

In the models predicting the three identity styles, gender differences emerged only with regard to the diffuse-avoidant style, where that orientation was associated with higher scores on the child report of parental rejection for boys, and lower scores on the child report of parental nurturing for girls. The normative and informational styles were associated with the child report of parental nurturing for both genders. These relationships held even when family dysfunction and the PMK reports of parenting style were controlled.

Later psychosocial functioning was represented by the five-factor summary scales of the youth and adult versions of the EIQ-i in cycles 5 and 8. These factors include self-awareness and self-expression, interpersonal skills, adaptability, stress management, and self-motivation and optimism. The child reports of parental nurturing and the informational identity style were positively related to the outcomes in cycle 5, while the

diffuse-avoidant style was negatively related. Stratifying the model by gender demonstrated that the normative and diffuse-avoidant identity styles had a significant impact on the cycle 5 outcome for boys, while the information-oriented style was significant for girls. The child's report of parental nurturing was significant for both genders, even when the parent reports were controlled.

Including the cycle 5 EIQ-i:YV scores in the cycle 8 model mediated the effect of the child reports of parental nurturing, as well as the information-oriented identity style. However, the normative style was a significant positive predictor for girls, and the diffuse-avoidant style a significant negative predictor for boys, even when the cycle 5 variable was controlled. This suggests that while the psychosocial strengths and abilities measured by the EIQ-i are strongly related to similar psychosocial skills in evidence at earlier ages, identity style continues to influence developmental outcomes in early adulthood. In sum, results showed that parental nurturing had a positive relationship with the formation of an adaptive identity style orientation, while parental rejection had a negative impact, particularly for boys. Furthermore, identity style played a mediating role in the relationship between parenting style and later psychosocial functioning, with the informational and normative styles corresponding with later psychosocial health.

A number of limitations in this study should be noted. First, none of the measures are included at more than one time point, and few are assessed within the same cycle. Furthermore, all of the participants are from the same cohort. While this has benefits in terms of delineating a temporal order of effects, the influence of a particular period or age cannot be evaluated. A multi-cohort design with repeated measures would allow for an

analysis of more than one time scale (Rabe-Hesketh & Skrondal, 2012), as well as providing an opportunity to examine change in the variables over time.

A related issue is the potential of bias resulting from the loss of participants over time, as well as from missing data. Statistics Canada's survey weights are adjusted for attrition, though this method does not reproduce the same amount of variability as would be found in a natural sample. Bootstrap weights were used to adjust the standard errors to compensate for this effect. Those participants selected into the final sample were compared with those not chosen on a range of demographic variables, as well as many of the analytical variables. Results showed that individuals were more likely to be in the study sample if they came from higher income households in cycle 2. There was a relatively small amount of data missing in each cycle within the selected sample. The measure with the greatest amount of missing data was the outcome variable in cycle 5. Missingness on that scale was associated with family dysfunction, with youth from more dysfunctional families having higher odds of being missing. However, the odds of missing data increased only by a minimal degree (approximately 9%). Nevertheless, overall this suggests the possibility that young people from households with lower socioeconomic status and more conflicted family environments might be underrepresented in this study. Replication of these findings in additional samples, potentially targeted at this group, would provide more support for the results.

Additional limitations arise from the scales that were available in the NLSCY to measure particular constructs. The parenting style items do not differentiate between the behaviours of mothers and fathers, and do not necessarily align with the dimensions of

parenting style that are traditionally studied (i.e. demandingness and responsiveness; (Baumrind, 1966, 2005; Maccoby & Martin, 1983). Rather, the NLSCY assesses aspects of nurturing or positive interactions and inconsistent parental discipline (Lempers et al., 1989). There is no obvious combination of these scales that would provide a measure of authoritative parenting that is a balance of warmth and direction, nor is support for autonomy assessed. However, as Lempers and colleagues argued, parental nurturing and a consistent, non-rejecting disciplinary approach are key parenting behaviors that are associated with authoritative parenting. Furthermore, it is likely that these aspects of parenting style could influence the perception of mattering, and therefore remain relevant topics to consider in this area.

Another limitation arising from the structure of the data and the analytic approach is that not all measures were assessed by both the respondent and their PMK. The family functioning items were only asked of the PMK, and assessments of identity style and later psychosocial functioning were made only by the youth. Different self-reported measures by one individual are generally more highly correlated with one another than with reports by another party, which confounds to some degree the results that are observed. In this study, the correlations between family functioning and the PMK reports of parenting style, as well as the correlations between the child reports of parenting style, identity style and later psychosocial outcomes, are all subject to potential bias resulting from common method variance. While internal processes such as identity style orientations are difficult to assess externally, having more of the measures at each point completed by two parties would help to reduce the problem. It is also possible that a different statistical approach

might be able to account for some degree of the correlation between responses provided by the same individuals.

Finally, the measure of family functioning collected for the NLSCY has a relatively narrow range. Most PMKs report low levels of dysfunction, as noted by Statistics Canada (Statistics Canada, 1998), which limits the ability to assess any association that might exist between the family climate and identity style for youth living in more difficult households.

Chapter 3

3 Mattering

The third hypothesis presented in the introduction dealt with the association between the perception of mattering and the identity style orientations. In this chapter, a longitudinal study of university students will be used to examine this relationship. Measures of perceived mattering and identity style were collected annually for three years, which allows for an examination of change both within and between individuals. Because research in this area is limited, models will be considered that investigate the effect of perceived mattering on identity style, as well as the reverse. Gender is incorporated as a covariate, as are relationships with faculty and students. The later is included in order to distinguish any correlation between the identity styles and perceived mattering to mothers, fathers, and friends in particular, from possible associations between these measures and positive relationships with others in general.

3.1 Sample Selection

This study was conducted between 2004 and 2006 at the University of Guelph in Ontario, Canada (Adams, 2003). Approval was obtained through the Office of Student Affairs to email approximately 2200 first-year students to invite them to participate in the longitudinal study. A link to the survey website was included in the message, and all measures were collected online early in the fall semester. Students who remained enrolled for the following two years were contacted again in the fall and asked to continue their participation. Each year students received one reminder to complete the online survey following the initial request.

There were 1387 students who participated in the first wave of the survey, and 838 continued their involvement through subsequent years. Table 9 shows the participation rate for each wave of the survey. Of this group, 816 individuals had complete data on the measures of interest for at least two waves of the study, and were included in the analysis. Sixty-one percent (n = 497) of these participants had data for all three waves. Table 10 shows the response pattern and proportions for the final sample. The selected participants contributed a total of 2129 observations for analysis across the three time points.

The average age of the final sample was 18.8 years in 2004, with a range of 17 to 21 years. Approximately 76% were female (n = 618). The vast majority of participants lived in residence at the university in 2004 (98%, n = 800), though only 21% (n = 171) were living there in 2005. By the third wave of the study, only 7% (n = 58) reported living in residence. A small proportion of the sample lived with their parents at any of the time points (n = 9, 24 and 13 respectively for 2004-2006). For 90.7% (n = 738) of the sample, their living arrangement in 2004 represented the first time they were living on their own. In the first year of the study, 19.5% of students were enrolled in the college of arts, 26.1% in biological sciences, 13% in physical and engineering sciences, 22.3% in social and applied human sciences, 7.5% in the Ontario agricultural college, and .4% in the Ontario veterinary college. Only a small proportion of the participants did not provide an answer (.5%), or were unsure (10.8%).

Table 9: Participation Rate of University Sample in Multiple Survey Waves

Participation	Frequency	Percent
2004 only	549	39.6
2004 & 2005	323	23.3
2004, 2005 & 2006	515	37.1
Total	*1387*	*100.00*

Table 10: Response Pattern Across Waves for Final University Sample

Pattern	Frequency	Percent
111	497	60.9
11.	310	38.0
.11	8	.98
1.1	1	.12
Total	*816*	*100.00*

Note: "." represents a time point with missing data

3.2 Measures

3.2.1 Identity Style

The outcome of interest in this study is identity style. The items used were drawn from the third version of the Identity Style Inventory (Berzonsky, 1992b, 1992c). The original inventory measures normative, diffuse-avoidant, and information-oriented identity styles using 9, 10, and 11 item scales, respectively. Three items from each subscale were administered in the questionnaire when the data were collected, based on decisions made by the researchers at that time. Selected items for the normative orientation include, "I

think it's better to have a firm set of beliefs than to be open-minded", "I think it's better to have fixed values, than to consider alternative value systems", and "Regarding religion, I've always known what I believe and don't believe; I never really had any serious doubts". Items for the diffuse-avoidant orientation are, "Many times by not concerning myself with personal problems, they work themselves out", "It's best for me not to take life too seriously; I just try to enjoy it", and "I try not to think about or deal with problems as long as I can". The information-orientation was measured by, "When I have a personal problem, I try to analyze the situation in order to understand it", "When I have to make a decision, I like to spend a to of time thinking about my options", and "When making important decisions I like to have as much information as possible". Each item was rated on a 5-point Likert scale ranging from 1(Not at all like me) to 5 (Very much like me). Items were averaged to create scales for each orientation style. Alpha reliabilities for the scales at each time point are .60, .67, and .66 for the normative orientation, .59, .57, and .60 for the diffuse-avoidant orientation, and .64, .63, and .64 for the information orientation. While these coefficients are relatively low, they are not unusual among studies that are using modifications of the third version of the identity style inventory (Adams et al., 2006; Berzonsky et al., 2013; Bosch & Card, 2012).

3.2.2 Mattering

The Mattering to Others Questionnaire (MTOQ; Marshall, 2001) is a measure of perceived positive mattering that asks a series of questions with three different referents (mother, father, and friends). The original scale contains 10 items, of which five were selected for this study. The questions are: "I am important to my _____", "I am missed

by my _____ when I am away", "When I talk, my _____ tries to understand what I am saying", "I am interesting to my _____", and "I matter to my _____". Each item was rated on a 5-point scale ranging from "not much" to "a lot", with higher scores reflecting a higher level of perceived mattering. One limitation of the scale is that there is no record of whether questions relating to "friends" are being answered with reference to the same people at each wave (Marshall, 2010). Cronbach's alphas for mother, father and friends were .89, .91, and .91 respectively for wave 1, .88, .92, and .92 for wave 2, and .87, .91, and .90 for wave 3.

As was done by Marshall, Liu, Wu, Berzonsky, and Adams (2010) in their analysis of this sample, the mattering scales were collapsed to create binary variables to address the degree of skew in the responses. The first four categories were collapsed into one, contrasting with the remaining category ("A lot"). The five items for each referent were summed to create separate scales for mother, father, and friends. As they explain, the conceptual approach behind the MTOQ construes the perception of mattering as being oriented to specific referents (parents and friends), rather than being a global assessment of mattering to "others" in general. Given this, and the fact that the respondents are in their first few years of university, largely away from their families, the referents were kept separate, allowing for potential variation in perceived mattering to mothers, fathers, and friends during this period.

3.2.3 Relationships with Faculty and Students

As an additional assessment of relationships with others during this period, specific to the university context in which the study was conducted, participants were also asked to rate

their relationships with faculty and other students using eight-items, which are based on those developed and used in prior research (Adams et al., 2006; Adams & Fitch, 1983; Adams, Ryan, & Keating, 2000). Each item was rated on a 5-point scale, anchored by a set of opposing adjectives. Participants were asked to assess their relationships with other students in their program using the following pairs: alienated/accepted, reserved/friendly, competitive/supportive, and sense of belonging/sense of alienation. The four dichotomies used to rate relationships with faculty members were: remote/approachable, impersonal/understanding, discouraging/encouraging, and unhelpful/helpful. Items were averaged to create separate scales for relationships with students and faculty. Reliability scores for relationships with students and faculty were .67 and .88 respectively for wave 1, .71 and .87 for wave 2, and .71 and .88 for wave 3.

3.3 Statistical Analysis

3.3.1 Missing Data

Among those respondents who participated beyond the first wave of the study, approximately two percent of the data were missing on the variables of interest. Listwise deletion was therefore used to arrive at the analytical sample of 816 participants.

Chi-square tests and logistic regression analyses were used to check for any significant differences between the final study sample and the original group of respondents to the survey (n = 1387). The two groups were not significantly different on any of the reported demographic characteristics measured in 2004, or on any of the variables used in the analysis. Comparisons were also made within the final sample between those who participated in two versus three waves of the survey. No significant differences were

found, with the exception that those who were living on their own for the first time in 2004 (including in residence) were more likely to respond to all three waves of the survey ($\chi^2 = 10.02, p = .002$).

3.3.2 Procedure

Longitudinal panel data, which follows the same group of respondents over time, presents an opportunity to examine change both within and between individuals. In regular ordinary-least squares regression, all observations are presumed to be independent, resulting in an error term that is unassociated with the observed values of the variables in the model. This assumption is violated in panel data, as repeated-measures with the same participant lead to correlated errors. A hierarchical linear model (HLM) addresses this problem by nesting observations (level one) within subjects (level two), and allowing some regression parameters to vary between individuals (Snijders & Bosker, 2012).

In its basic form, the intercept of the regression model is allowed to vary between respondents, and the error term is separated into the deviation of the observed outcome from the subject-specific mean (ϵ), and the deviation of the subject-specific mean from the grand mean (ζ). These deviations are referred to as the level one (within-subject) and level two (between-subject) residuals, respectively. They are treated as random effects, and are assumed to be independent and normally distributed. The variance of ζ is represented by ψ, and the variance of ϵ by θ. The separation of these components allows the variability in the outcome to be decomposed, such that

$$var(Y_{ti}) = var(\zeta_i) + var(\epsilon_{it}) = \psi^2 + \theta^2 \quad (2)$$

The intraclass correlation coefficient is calculated as a ratio of these two variances, and represents the proportion of the total variability in the outcome that is due to individual differences (i.e. level two or between-subject effects).

$$\rho = \frac{\psi^2}{\psi^2 + \theta^2} \quad (3)$$

It is also possible to split the coefficients for independent variables into within and between effects, by including both deviation scores and subject-specific means in the model (Hoffman & Stawski, 2009; 2012). In the following equation, the regression coefficients for these components are represented as γ_{10} and γ_{01}. Time-invariant variables (e.g. gender, ethnicity) are constant within individuals, and therefore have only between-subject components (these variables are represented by z, with the coefficient γ_{02}.

$$Y_{ti} = \gamma_{00} + \gamma_{10}(x_{ti} - \bar{x}_{.i}) + \gamma_{01}\bar{x}_{.i} + \gamma_{02}z_i + \zeta_i + \epsilon_{ti} \quad (4)$$

The two primary variables of interest in this study are identity style and perceived mattering. As discussed in Chapter one, the development of both of these constructs is iterative in nature, so there is no single, causal order of effects that can be tested. Consequently, two separate sets of multilevel random intercept regression models were constructed. In the first set of models, the three identity style orientations were regressed on mattering to mother, father, and friends. The second set of models regressed the

mattering variables on the identity styles. Gender, age at time one, and relationship to faculty and students were included as covariates in all analyses. Subject-specific means (between-person effects) were centered on the grand mean for the variable, whereas deviation scores (within-person effects) were centered on the subject-specific means. Age was centered at 17, the age of the youngest respondents at the start of the study. A set of dummy variables for the time periods was used to control for changes in the outcome at each wave not related to the predictors (Allison, 2009).

All of the analysis was conducted using Stata 13 (StataCorp, 2013). The multilevel modelling was done using the xtmixed command with maximum likelihood estimation, which takes the intraclass correlation coefficient of the nested data into account, and also allows for unbalanced data (Rabe-Hesketh & Skrondal, 2012). Standard errors were calculated using Stata's sandwich estimator that is robust to non-normality and model misspecification.

3.4 Results

3.4.1 Univariate Analysis

The measures used in this analysis are described in Table 11. The standard deviation of the sample is broken down in three ways. The overall standard deviation is the square root of the mean squared deviation of the observed values from the overall mean, which is also presented in the table. In contrast, the between standard deviation is based on the differences of the means for each individual from the overall mean, and the within standard deviation represents the variation of the observations over time around the individual means. The intraclass correlation coefficient represents the proportion of the

overall variability that is due to differences between individuals, and is equivalent to the correlation between scores for the same individual at different time points; a higher intraclass correlation coefficient reflects less within-subject variation.

Among the identity styles, the informational orientation has the highest mean, and the least amount of variability both within and between participants. This style also has the lowest intraclass correlation coefficient, indicating that differences between respondents account for 42% of the total variation in scores. In contrast, the normative orientation has the lowest mean, and the most variability, 62% of which can be attributed to individual differences. Means of the different perceived mattering scales fell into a narrower range, with perceived mattering to mother having the highest average at 4.53, and perceived mattering to friends having the lowest at 4.20. The intraclass correlation coefficients show that perceived mattering remains relatively constant over the period of the study, with most of the variability resulting from differences between participants. Perceived mattering to fathers remains the most stable over time (*ICC* = .76), while the perception of mattering to friends undergoes the largest change (*ICC* = .59). Relationship to faculty and relationship to students have similar means, and these measures have the highest amount of within-person variability during this period.

Table 11: Means, Standard Deviations, and Intraclass Correlation Coefficients of Measures of Identity Style, Perceived Mattering, and Relationships to Faculty and Students

Scale	Mean	*SD* - Overall	*SD* - Between	*SD* - Within	*ICC*
ISI - Normative	2.48	0.85	0.74	0.41	.62
ISI - Diffuse-Avoidant	2.86	0.83	0.71	0.42	.58
ISI - Informational	4.15	0.66	0.53	0.39	.42
Mattering to Mother	4.53	0.68	0.61	0.31	.67
Mattering to Father	4.28	0.89	0.82	0.34	.76
Mattering to Friends	4.20	0.78	0.68	0.39	.59
Relationship to Faculty	3.60	0.84	0.69	0.50	.44
Relationship to Students	3.63	0.73	0.60	0.42	.45

3.4.2 Bivariate Correlations

Tables 12, 13, and 14 show the bivariate correlations between all of the analytic variables at each wave of the survey. Following Cohen (1992), effect sizes are considered small, medium, and large based on corresponding correlation coefficients of .10, .30, and .50. Most of the significant correlations found among the variables in this study were small. Gender had a small, but consistent, relationship with the diffuse-avoidant identity style, with females having lower scores. Females also reported a higher level of perceived mattering to friends at each wave, though these correlations were also small.

Among the identity styles, the strongest correlations were found between the informational and diffuse-avoidant orientations, which had a small to moderate negative correlation at each time point. The correlations between perceived mattering to mother

and father ranged from .44 to .48 across waves, while correlations between these variables and perceived mattering to friends were somewhat lower (range .27 to .34). Relationship to students had a moderate positive correlation with mattering to friends, and correlations between relationship to faculty and relationship to students were medium and positive in all waves.

Table 12: Bivariate Correlations Between Demographic Variables, Identity Style Orientations, Perceived Mattering to Mothers, Fathers, and Friends, and Relationships With Faculty and Students in Wave 1

Variable	1	2	3	4	5	6	7	8	9	10
1. Female	1									
2. Age at Wave 1	-.08*	1								
3. IS - Norm	-.04	.02	1							
4. IS - Diff	-.14***	-.05	.07*	1						
5. IS - Info	.03	.06	.01	-.21***	1					
6. PM - Mother	.06	-.06	.06	-.10**	.08*	1				
7. PM - Father	.06	-.01	.07	-.03	.03	.48***	1			
8. PM - Friends	.25***	-.05	.01	.01	.03	.27***	.27***	1		
9. Rel. to Faculty	.01	.02	.02	-.07	.08*	.15***	.12***	.15***	1	
10. Rel. to Students	.06	-.05	.02	-.06	.11**	.13***	.13***	.27***	.33***	1
N	*808*									

Note. ISI = Identity Style; PM = Perceived Mattering; * $p < .05$,** $p < .01$, *** $p < .001$

Table 13: Bivariate Correlations Between Demographic Variables, Identity Style Orientations, Perceived Mattering to Mothers, Fathers, and Friends, and Relationships With Faculty and Students in Wave 2

Variable	1	2	3	4	5	6	7	8	9	10
1. Female	1									
2. Age at Wave 1	-.08*	1								
3. ISI - Norm	-.08*	.08*	1							
4. ISI - Diff	-.20***	-.03	.06	1						
5. ISI - Info	.07	.04	-.06	-.27***	1					
6. PM - Mother	.06	-.01	.04	-.04	.10**	1				
7. PM - Father	.06	.00	.01	-.02	.07*	.47***	1			
8. PM - Friends	.15***	-.04	-.03	.09*	.05	.34***	.32***	1		
9. Rel. to Faculty	.02	.02	-.01	.01	.12***	.20***	.19***	.21***	1	
10. Rel. to Students	.03	-.05	.01	.00	.11**	.15***	.15***	.30***	.30***	1
N	*815*									

Note. ISI = Identity Style; PM = Perceived Mattering; * $p < .05$,** $p < .01$, *** $p < .001$

Table 14: Bivariate Correlations Between Demographic Variables, Identity Style Orientations, Perceived Mattering to Mothers, Fathers, and Friends, and Relationships With Faculty and Students in Wave 3

Variable	1	2	3	4	5	6	7	8	9	10
1. Female	1									
2. Age at Wave 1	-.09*	1								
3. ISI - Norm	-.02	.04	1							
4. ISI - Diff	-.12**	.00	.09*	1						
5. ISI - Info	.10*	.05	-.16***	-.36***	1					
6. PM - Mother	.12**	-.06	.11*	-.04	.03	1				
7. PM - Father	.04	.00	.13**	.02	.01	.44***	1			
8. PM - Friends	.19***	.00	.02	-.02	.05	.31***	.29***	1		
9. Rel. to Faculty	.11*	.02	-.13**	.01	.07	.17***	.09*	.23***	1	
10. Rel. to Students	.01	-.06	-.09*	-.01	.01	.13**	.17***	.30***	.38***	1
N	*506*									

Note. ISI = Identity Style; PM = Perceived Mattering; * $p < .05$,** $p < .01$, *** $p < .001$

3.4.3 Hierarchical Random Intercept Models with Separated Within and Between-Subject Effects

The first set of models, shown in Table 16, are regressions on the three identity style orientations. A Wald test was used to assess the significance of the models, as likelihood ratio tests are not appropriate for estimates with robust standard errors. Following Snijders and Bosker (2012), an estimate of R^2 was calculated as the proportional reduction in the level one mean squared error between the final model and an empty model with no covariates.

$$R^2 = 1 - \frac{\hat{\theta}^2_{full} + \hat{\psi}^2_{full}}{\hat{\theta}^2_{empty} + \hat{\psi}^2_{empty}} = \frac{(\hat{\theta}^2_{empty} + \hat{\psi}^2_{empty}) - (\hat{\theta}^2_{full} + \hat{\psi}^2_{full})}{\hat{\theta}^2_{empty} + \hat{\psi}^2_{empty}} \quad (5)$$

Similarly, separate estimates for level one and level two were calculated based on the separate variance components.

$$R^2_{L2} = 1 - \frac{\hat{\psi}^2_{empty} - \hat{\psi}^2_{full}}{\hat{\psi}^2_{empty}} \quad (6)$$

$$R^2_{L1} = 1 - \frac{\hat{\theta}^2_{empty} - \hat{\theta}^2_{full}}{\hat{\theta}^2_{empty}} \quad (7)$$

According to the standards suggested by Cohen (1992), the thresholds for small, medium, and large estimates of R^2 are .0196, .1304, and .2592, respectively. While statistically significant, only a small amount of the total variability in the identity styles was predicted by the models. The time dummies were significant for all outcomes, but the only substantial trend was a small decrease over time for the normative style.

There is no single method of calculating standardized coefficients for hierarchical linear models, as the variance in the outcome is partitioned into different levels. However, Hoffman and Stawski (2009) have proposed that one form of standardization can be computed by multiplying the regression coefficient by the ratio of the standard deviation of the predictor to the standard deviation of the residuals at the appropriate level, which are attained from an empty model with no predictors (shown in Tables 15 and 17).

$$X_{(Within)_{std}} = \beta_{unstd} \times \frac{SD(x_{ti} - \bar{x}_{.i})}{SD(\hat{\theta}^2_{empty})} \quad (8)$$

$$X_{(Between)_{std}} = \beta_{unstd} \times \frac{SD(\bar{x}_{.i})}{SD(\hat{\psi}^2_{empty})} \quad (9)$$

Using these formulas, the standardized coefficients were calculated for each predictor in the model, and the values are included the regression table.

Table 15: Summary of Null Hierarchical Random Intercept Models Predicting Identity Style Orientation With Separated Within and Between Effects

	Normative B	Diffuse/Avoidant B	Informational B
Constant	2.48***	2.86***	4.15***
	(.03)	(.02)	(.02)
Random-effects			
ψ (*Level 2 variance*)	.45	.39	.18
	(.03)	(.02)	(.01)
θ (*Level 1 variance*)	.27	.29	.25
	(.01)	(.01)	(.02)
N (obs)	2129	2129	2129

Note: Robust standard errors in parentheses; * p < .05,** p < .01, *** p < .001

Table 16: Summary of Hierarchical Random Intercept Models Predicting Identity Style Orientation With Separated Within and Between Effects

	Normative		Diffuse/Avoidant		Informational	
Variable	*B (SE)*	β	*B (SE)*	β	*B (SE)*	β
Cycle 2	-.11***		-.05*		.06*	
	(.03)		(.03)		(.03)	
Cycle 3	-.13***		-.07*		.08*	
	(.03)		(.03)		(.03)	
Female	-.08	–.05	-.31***	–.21	.02	.02
	(.06)		(.06)		(.04)	
Age Wave 1	.06	.07	-.03	–.04	.05*	.08
	(.04)		(.03)		(.02)	
ISI - Normative (Between)			.03	.04	-.04	–.08
			(.04)		(.02)	
ISI - Normative (Within)			.13***	.10	.00	.00
			(.03)		(.04)	
ISI – Diffuse/Avoidant (Between)	.03	.04			-.24***	–.39
	(.04)				(.03)	
ISI – Diffuse/Avoidant (Within)	.12***	.10			-.10**	–.08
	(.03)				(.03)	
ISI - Information (Between)	-.11*	–.09	-.41***	–.34		
	(.05)		(.04)			
ISI - Information (Within)	.01	.01	-.12**	–.09		
	(.04)		(.04)			

Note: Robust standard errors in parentheses; * p < .05,** p < .01, *** p < .001

Table 16: Continued

	Normative		Diffuse/Avoidant		Informational	
Variable	*B (SE)*	β	*B (SE)*	β	*B (SE)*	β
Mattering to Mother (Between)	.12*	.11	-.09*	–.09	.05	.07
	(.05)		(.04)		(.04)	
Mattering to Mother (Within)	.01	.01	.01	.01	.06	.04
	(.05)		(.06)		(.05)	
Mattering to Father (Between)	.03	.04	.00	.00	-.01	–.03
	(.04)		(.03)		(.03)	
Mattering to Father (Within)	.05	.03	.01	.01	.08	.05
	(.04)		(.05)		(.04)	
Mattering to Friends (Between)	-.02	–.03	.12**	.13	-.02	–.03
	(.05)		(.04)		(.03)	
Mattering to Friends (Within)	-.03	–.02	.09**	.07	.07*	.06
	(.03)		(.03)		(.03)	
Relationship to Faculty (Between)	-.06	–.06	.01	.01	.06*	.09
	(.04)		(.04)		(.03)	
Relationship to Faculty (Within)	.00	.00	.01	.01	.04	.04
	(.03)		(.02)		(.02)	
Relationship to Students (Between)	.01	.01	-.04	–.04	.05	.07
	(.05)		(.05)		(.03)	
Relationship to Students (Within)	-.03	–.02	.01	.01	.06*	.05
	(.03)		(.03)		(.03)	

Note: Robust standard errors in parentheses; * p < .05,** p < .01, *** p < .001

Table 16: Continued

	Normative		Diffuse/Avoidant		Informational	
Variable	*B (SE)*	β	*B (SE)*	β	*B (SE)*	β
Constant	2.49***		3.19***		4.00***	
	(.10)		(.08)		(.06)	
Random-effects						
ψ (*Level 2 variance*)	.44		.32		.15	
	(.03)		(.02)		(.01)	
θ (*Level 1 variance*)	.26		.28		.24	
	(.01)		(.01)		(.01)	
Wald χ^2	66.38***		183.88***		167.11***	
N (obs)	2129		2129		2129	
Residual *ICC*	.63		.54		.38	
R^2 - Total	.03		.12		.11	
R^2 - Level 2	.02		.18		.19	
R^2 - Level 1	.04		.04		.04	

Note: Robust standard errors in parentheses; * p < .05,** p < .01, *** p < .001

Two of the independent variables made significant, nontrivial unique contributions to the amount of explained variability in the normative identity style. Within-person change in the diffuse-avoidant style was positively related to normative scores, showing that in years when the score for the diffuse-avoidant orientation was above average for a given individual, so was their score on the normative style. Differences between individuals on the mattering to mother scale were also related to normative scores; individuals with higher mattering to mother scores on average had higher mean normative scores. The

standardized coefficients show the effects of both predictors to be relatively similar and small in size. The residual intraclass correlation coefficient indicates that a substantial amount of variability in the normative orientation is not explained by the covariates, and 63% of that variance represents unobserved between-subject differences. The calculated R^2 values indicate that this model explained more variability at level one (within-subject), than at level two (between subject).

The diffuse-avoidant orientation was the only identity style that was significantly predicted by gender, with females having lower scores than males. Within participants, time points with higher scores for the diffuse-avoidant orientation were associated with higher scores on the normative style. Comparing individuals, those with higher mean diffuse-avoidant scores also had lower mean informational style scores, and higher mean scores on the mattering to friends scale. The standardized coefficients suggest that gender and information-style scores explain the most unique variability in the outcome, at the between-subject level. The variance estimates for the random effects remain substantial, indicating that there is variability at both levels that remains unexplained by the model. The residual intraclass correlation coefficient indicates that 54% of this conditional variability exists at level two. While the R^2 for the total variance is low at 12%, separating the effects by level shows that only 4% of the within-subject variability was explained by the model, while 18% of the variability between-subjects was accounted for.

Finally, in the model predicting the information-oriented identity style, only the diffuse-avoidant style made a significant unique contribution that was notable. Both the within

and between-subject components of the variable were significant, but only the between-subject effect was substantial. Comparing participants, those who had higher mean scores on the information-orientation had lower mean scores for the diffuse-avoidant style. The residual intraclass correlation coefficient indicates that 38% of the outstanding variability exists at level two, and the R^2 values show that 19% of the variability between-subjects was explained by the model, as opposed to only 4% of the variability within-subjects.

Table 17: Summary of Null Hierarchical Random Intercept Models Predicting Perceived Mattering to Mother, Father, and Friends, with Separated Within and Between Effects

	Mother *B*	Father *B*	Friends *B*
Constant	4.52***	4.28***	4.20***
	(.02)	(.03)	(.02)
Random-effects			
ψ (*Level 2 variance*)	.31	.60	.35
	(.03)	(.05)	(.03)
θ (*Level 1 variance*)	.15	.18	.25
	(.01)	(.01)	(.02)
N (obs)	2129	2129	2129

Note: Robust standard errors in parentheses; * p < .05,** p < .01, *** p < .001

Table 18 contains the second set of models, which show regressions on mattering to mother, father, and friends. None of the time dummies showed a substantial trend over time for any of the outcomes. While a greater proportion of the variance in the mattering outcomes was explained relative to the previous set of models, the variance components

were still significant in these tests. This indicates that a significant amount of variability remains to be explored.

Three variables made significant, non-trivial, unique contributions to explained variability in scores on the mattering to mother scale. The most substantial was mattering to father, which had significant effects at both levels of analysis. Individuals had higher mattering to mother scores at points when scores on mattering to father were also high. At level two, participants who had higher average scores on mattering to mother also had higher average scores on mattering to father, mattering to friends, and relationship to faculty. Thirty percent of the between-subject variability was explained by this model, along with 23% of the within-subject variability.

In accordance with the previous regression, mattering to father was most strongly associated with mattering to mother, positively, both within and between-subjects. In addition, higher average scores on the mattering to friends scale were also significantly related to higher average scores on the mattering to father scale. Twenty-five percent of the total variability was explained by this model, which is the same proportion explained at level one and level two.

Lastly, the only significant variable to make a substantial contribution to the amount of within-subject variability explained in the mattering to friends scores was mattering to father. Between participants, those with higher mean scores on the mattering to friends scale also had higher scores on the mattering to mother scale, the mattering to father scale, the diffuse-avoidant identity scale, and the relationship to students scale. Females also had higher mean scores on this outcome than males. The standardized coefficients

indicate that the between-subject variables for gender, mattering to mother, and relationship to students had the largest effects. The residual intraclass correlation coefficient indicates that approximately half of the remaining variance to be explained is between-subjects. The R^2 values clearly show that most of the variability explained by this model was at level two (35%).

Table 18: Summary of Hierarchical Random Intercept Models Predicting Perceived Mattering to Mother, Father, and Friends, with Separated Within and Between Effects

	Mother		Father		Friends	
Variable	*B (SE)*	β	*B (SE)*	β	*B (SE)*	β
Cycle 2	.01		-.01		-.08**	
	(.02)		(.02)		(.02)	
Cycle 3	.01		-.00		-.05	
	(.02)		(.02)		(.03)	
Female	-.02	–.01	-.01	–.01	.33***	.24
	(.04)		(.06)		(.05)	
Age Wave 1	-.05	–.06	.02	.02	.00	.01
	(.03)		(.03)		(.03)	
Mattering to Mother (Between)			.53***	.42	.24***	.25
			(.05)		(.05)	
Mattering to Mother (Within)			.50***	.36	.08	.05
			(.05)		(.05)	

Note: Robust standard errors in parentheses; * p < .05,** p < .01, *** p < .001

Table 18: Continued

	Mother		Father		Friends	
Variable	*B (SE)*	β	*B (SE)*	β	*B (SE)*	β
Mattering to Father (Between)	.28***	.41			.13***	.17
	(.04)				(.03)	
Mattering to Father (Within)	.42***	.37			.16***	.11
	(.04)				(.05)	
Mattering to Friends (Between)	.19***	.23	.20***	.17		
	(.04)		(.04)			
Mattering to Friends (Within)	.04	.04	.10***	.09		
	(.03)		(.03)			
ISI - Normative (Between)	.06*	.08	.03	.03	-.02	–.02
	(.03)		(.03)		(.03)	
ISI - Normative (Within)	.00	.01	.03	.03	-.02	–.02
	(.02)		(.02)		(.03)	
ISI - Diffuse-Avoidant (Between)	-.05	–.07	-.00	.00	.09**	.11
	(.03)		(.04)		(.03)	
ISI - Diffuse-Avoidant (Within)	.00	.00	.01	.01	.07*	.06
	(.02)		(.02)		(.03)	

Note: Robust standard errors in parentheses; * p < .05,** p < .01, *** p < .001

Table 18: Continued

	Mother		Father		Friends	
Variable	*B (SE)*	β	*B (SE)*	β	*B (SE)*	β
ISI - Information (Between)	.06	.06	-.03	–.02	-.02	–.02
	(.04)		(.05)		(.04)	
ISI - Information (Within)	.03	.03	.05*	.04	.07*	.05
	(.03)		(.02)		(.03)	
Relationship to Faculty (Between)	.10**	.12	.05	.04	.07	.08
	(.04)		(.04)		(.04)	
Relationship to Faculty (Within)	-.01	–.01	.02	.03	-.00	.00
	(.02)		(.02)		(.02)	
Relationship to Students (Between)	-.02	–.02	.05	.04	.29***	.29
	(.04)		(.05)		(.04)	
Relationship to Students (Within)	.01	.01	.01	.01	.09***	.08
	(.02)		(.02)		(.03)	
Constant	4.62***		4.25***		3.99***	
	(.06)		(.07)		(.07)	
Random-effects						
ψ (*Level 2 variance*)	.22		.45		.23	
	(.02)		(.05)		(.02)	

Note: Robust standard errors in parentheses; * p < .05,** p < .01, *** p < .001

Table 18: Continued

	Mother		Father		Friends	
Variable	*B (SE)*	β	*B (SE)*	β	*B (SE)*	β
θ (*Level 1 variance*)	.12		.14		.23	
	(.01)		(.01)		(.02)	
Wald χ^2	293.75***		445.82***		298.73***	
N (obs)	2129		2129		2129	
Residual *ICC*	.65		.76		.50	
R^2 - Total	.28		.25		.23	
R^2 - Level 2	.30		.25		.35	
R^2 - Level 1	.23		.25		.06	

Note: Robust standard errors in parentheses; * p < .05,** p < .01, *** p < .001

One of the limitations of this data is the distribution of the outcome variables, and particularly the mattering scales. While it is a positive observation that most respondents felt they mattered a great deal to the significant people in their lives, from a statistical perspective the skewed distribution is problematic. While robust standard errors were used in the linear models to account for non-normality, a secondary approach was also adopted to support the findings. Each of the outcome variables was split at the mean, generating a binary outcome that could be used in a logistic model. Stata's xtlogit command was used to run the same random-intercept model as the linear regressions, including the separation of within and between-subject effects. These models are included in Appendix U and V.

For the normative identity style, the negative trend over time and the slight negative relationship with the informational style were affirmed. However, there were no significant effects of the diffuse-avoidant orientation or mattering to mother in the logistic model. The same pattern of significant findings was replicated in the linear and logistics models for both the diffuse-avoidant and informational style outcomes. Similarly, the substantial results in the linear models were matched in the logistic models for mattering to father and mattering to friends.

The logistic model for mattering to mother diverged from the linear results in a few ways. First, the between-subject component of relationship to faculty was not significant in the logistic model. However, the within component of the diffuse-avoidant style, and the between component of the informational style were significant. The effect of the diffuse-avoidant style was relatively small (OR=0.68, p=.05), but the odds of having an above average score on the mattering to mother scale were doubled with each unit increase in a participant's mean score on the information-oriented identity style scale.

3.5 Summary and Limitations

The focus of this chapter was the relationship between the identity style orientations and perceived mattering to mothers, fathers, and friends. Longitudinal data collected from a sample of university students over a three-year period was used to explore the dynamic of these concepts both in terms of within-subject change, as well as between-subject differences. Participants' relationships with faculty and other students provided insight into the broader social environment in which the respondent was living, and the

interaction of those factors with identity style and the perception of mattering to parents and friends.

Most of the significant findings reflected associations among the identity styles and between the referents for perceived mattering. A significant within-subject relationship implies that a change in one variable corresponds to a change in another across time for a particular individual, reflected as a rise or fall from that individual's average value for each variable. In contrast, significant between-subject relationships are comparisons of overall average scores, so a participant with a high average score on one variable might also have a high average score on another, relative to other respondents. The normative and diffuse-avoidant orientation styles were positively associated within-subjects; deviations from a participant's average use of one of these styles was accompanied by a parallel deviation from the average use of the other. In contrast, the diffuse-avoidant and information-oriented styles had a negative relationship when comparing participants, such that respondents with a higher average diffuse-avoidant identity scores had lower informational identity scores and vice-versa. Among the perceived mattering variables, the level of perceived mattering to mother and father was positively associated both within and between-subjects. Comparing respondents, those who felt they mattered a lot to one of their parents, on average, also felt they mattered a lot to the other. Looking at changes over time for each participant, at points when mattering to mother was higher than usual, so was mattering to father, and at points when mattering was lower than average for one parent, it was also lower for the other. The relationship between perceived mattering to parents and perceived mattering to friends was most apparent

when the average scores for different participants were compared; those respondents who perceived they mattered more to their parents also felt they mattered more to their friends, relative to other participants.

All of the remaining effects were at the between-subject level, comparing participants in terms of their average scores across the three time points. Individuals with higher normative identity scores also had higher scores on the perceived mattering to mother scale, and individuals with higher diffuse-avoidant scores also had higher scores for perceived mattering to friends. Relationship to faculty was positively associated with perceived mattering to mother, and individuals with more positive relationships with other students were also more likely to perceive they mattered a lot to their friends. The only gender difference that was found was for the diffuse-avoidant identity style, with females having lower scores than males.

There were a number of limitations to this study that must be considered when interpreting the results. First, only three items from the full Identity Style Inventory were used to measure each identity style orientation. While it is understandable that this might have been done to reduce the respondent burden of the questionnaire as a whole, it left little leeway to address issues of reliability in the scales. As mentioned, the observed reliabilities are not unusual for this measure (Adams et al., 2006; Berzonsky et al., 2013; Bosch & Card, 2012); however, they are low, and it is possible that alternate items might have yielded better results if the full inventory had been used.

A second concern arises from the relatively homogeneous nature of the respondents. The sample was limited to a university population, the great majority of whom were in

residence during the first wave of the study. In addition, the range of the observed variables was limited. The perceived mattering items, in particular, were considerably skewed to the left, with most participants reporting that they felt they mattered a lot to their mothers, fathers, and friends. This was addressed to an extent by the use of robust standard errors, and results were bolstered by the additional step of running a set of models with dichotomized outcomes, but further research is needed to strengthen the findings with the use of a broader sample and time frame.

A related issue is the attrition of participants across the three waves of the survey. Comparisons of the original and final samples revealed no significant differences on any of the demographic characteristics that were measured, or in the measures used in the analysis. That said, the loss of respondents by the end of the study inevitably reduces the variability in the outcomes and predictors, and the generalizability of the results.

Finally, while within-subject variables are fixed-effects that have no potential to be distorted by time-invariant variables excluded from the models, the between-subject variables are threatened by such omissions. Furthermore, effects at both levels are biased if there are time-varying covariates that are missing. The collection of this data focused on different measures of identity development, and the demographic information that was collected from participants was minimal. As a result, there were few controls that could be included in the models, or used in an instrumental variable approach. Future research should address the relationship between identity style and perceived mattering within the context of a broader set of covariates.

Chapter 4

4 Discussion and Conclusions

This dissertation explored connections among identity styles, parenting styles, and perceptions of mattering to significant others. The multidimensional model of identity (Côté & Levine, 2002) was used to model relationships among these three concepts, providing a theoretical structure that incorporates both interpersonal and intrapersonal processes, and involves all aspects of Erikson's tripartite identity (personal, social, and ego; Erikson, 1968). Based on this framework, a number of potential relationships and interactions among the operationalizations of each construct were hypothesized.

Two analytical studies were conducted to test the model. The first used Statistics Canada's National Longitudinal Survey of Children and Youth (NLSCY), which followed a cohort of children from early adolescence into early adulthood. This allowed for the examination of parenting style, identity style, and later psychosocial outcomes. 67The second study used longitudinal data collected over three years on a sample of university students, focusing on the relationship between identity styles and mattering to mothers, fathers, and friends. Results from these two studies are discussed below in reference to each of the hypotheses presented in Chapter One.

4.1 Discussion of findings

Hypothesis (set) 1 (parenting styles and identity styles): A nurturing parenting style will provide stability for the personal and social identities which will afford security for further identity exploration, manifest in an association with the information-oriented

identity style; however, a caring environment that does not encourage exploration may also be associated with a normative style. Where the dimension of autonomy support cannot be distinguished from parental warmth or affirmation, a nurturing parenting style will be associated with both the informational and normative identity styles. Uninvolved or rejecting parenting styles will be positively associated with a diffuse identity style, and negatively associated with a normative identity style.

The analysis of the NLSCY provides partial support for these hypotheses. As predicted, a nurturing parenting style was associated with the development of an information-oriented identity style. Furthermore, for girls, both of these variables were related to positive psychosocial development at later ages. A nurturing parenting style was also associated with the normative identity style for both genders. For boys, this combination of styles was positively related to later outcomes in cycle 5. Notably, the parent reports of nurturing behaviour were not significant, whereas the child reports were, which reinforces the consequential importance of the reflexive interpretation and internalization of the parent-child interaction on the part of the child. In line with previous research (e.g. Berzonsky et al., 2007), there was also some evidence that the association between the nurturing parenting style and later psychosocial outcomes was mediated by identity style. It is important to note that the measure of parental nurturing available in this study did not distinguish between behaviours that were caring, and those that encouraged exploration or autonomy. Therefore, while these results affirm the findings of previous research that has identified a relationship between a nurturing environment and both the normative and information-oriented identity styles (Berzonsky, 2004b; Smits et al., 2008;

Soenens et al., 2011), they cannot speak to what aspects of the parental relationship differentiate the development of the two styles of identity.

Consistent with the literature, the diffuse-avoidant identity style was associated with a negative parenting style (e.g. (Berzonsky, 2004b; Soenens et al., 2011), though the type of negative parenting behaviour differed by gender. For boys, a higher self-reported score on the measure of parental rejection was associated with higher diffuse-avoidant identity scores. Furthermore, for boys, the PMK report of parenting style was also negative, and was significant until the child report was included in the model. In contrast, for girls, there was a relationship between the diffuse-avoidant identity style and a lower self-reported score on the measure of parental nurturing. Unlike other studies (Berzonsky, 2011; Berzonsky & Kinney, 2008), there were no significant gender differences in overall scores on any of the identity styles, including diffuse-avoidance, so variation was found only in the related parenting style.

The measure of parental rejection used in this study reflects elements of aggressive behaviour (e.g. “My parents hit me or threaten to do so”), as well as inconsistent regulation or monitoring (e.g. “My parents enforce a rule or do not enforce a rule depending upon their mood”). The later has similarities with the concept of parental behavioural control that has been used in other studies of parenting and identity style. Smits et al. (2008) found that perceived behavioural control by parents was negatively associated with the diffuse-avoidant identity style in males. They suggest that a lack of guidance from parents may leave young people adrift in an environment with many possible identity-relevant options, leading to superficial, broad identity exploration, and

procrastination in making identity commitments. Soenens et al. (2011) have argued that parents who provide limited support are potentially bad exemplars for their children, modelling egocentric and self-absorbed behaviour. Youth who seek to identify with parents who they find are unresponsive may themselves adopt an exploitative and self-centered approach to others, and may be aimless and hedonistic in their search for identity.

The measure of parental nurturing used in the NLSCY focuses primarily on positive affirmation (e.g. "My parents speak of the good things I do"), and the encouragement of expression (e.g. "My parents listen to my ideas and opinions"). It's possible that some girls respond to an *absence* of this type of reinforcement by withdrawing and turning inward in a self-punitive manner, expressed through higher levels of anxiety and depression. While they did not find any significant gender differences, Berzonsky and Kinney (2008) found an association between the diffuse-avoidant identity style and the use of maladaptive coping mechanisms that included turning against the self. It is possible this type of intrapunitive coping leads to rumination, a form of dysfunctional self-exploration that has been found to be more common in females, and related to difficulties in forming identity commitments (Luyckx et al., 2008).

Research has also demonstrated the reciprocal nature of parent-child relationships, in which a parent's behaviour elicits a response from the child that further influences parenting style or practices (Luyckx, Schwartz, Goossens, Beyers, & Missotten, 2011; Stice & Barrera, 1995). In a longitudinal study of university students, Luyckx, Soenens, Vansteenkiste, Goossens, and Berzonsky (2007) showed how parental psychological

control inhibited identity commitment, while different forms of identity exploration elicited higher levels of psychological control. Perhaps girls and boys elicit, or react differently to, some parenting practices, which leads to further differences in parenting style, which then affects identity development (Collins & Russell, 1991; Maccoby, 1992).

It is also possible that the measures used in this study to assess the nurturing and rejecting parenting styles fail to differentiate a third dimension that is consequential for identity development. In speaking of parental "responsiveness", Maccoby and Martin (1983) suggest,

> *When parents respond contingently they may be seen as providing children with control over their environment, and thus fostering the development of efficacy as distinct from helplessness. Whether parental responsiveness be viewed as contingent reinforcement (meaning, presumably, that the parents are "shaping" the child by responding differentially to desired and undesired behavior), as providing control to the child, or merely as parental sensitivity and adaptation to the child's signals, states, and needs, the concept differs importantly from that of warmth, which includes affection or praise when they are given contingently but also when they are given on the parent's impulse regardless of the concurrent state, signals, and behavior of the child. (P. 39)*

It is possible that there is a common lack of responsiveness that is perceived both by boys and girls, but through different styles of parenting as operationalized in the NLSCY. For example, perhaps girls are more attuned to an absence of positive attention when anticipated, captured as a low level of nurturance, whereas boys are more likely to notice and encode an inconsistent application of behavioural regulation, captured as a high level of rejection. A number of studies have found gender differences in emotional and behavioural autonomy in early adolescence, which could affect sensitivity to different parental behaviours, as well as sources of tension and distress (Beyers & Goossens,

1999; Frank et al., 1988; Marshall, 2001). If it is ultimately a combination of individuation and connectedness that builds the foundation for successful identity exploration, then parenting behaviour that either undermines secure emotional attachment, or fails to engender healthy self-regulatory abilities, will be more likely to lead to a diffuse-avoidant identity style (Berzonsky, 2004b; Berzonsky et al., 2007; Campbell et al., 1984; Grotevant & Cooper, 1986).

The final component of the hypothesis was that a rejecting parenting style would be negatively associated with the normative identity style. While the bivariate correlations and regression coefficients were in the expected direction, none were significant. One possibility is that the moderate, negative correlation between the rejecting and nurturing parental style scales used in this study led to a situation in which the rejecting parenting style score represented the shared variability of the two parenting styles, such than only one registered as significant. The moderate size of the structural coefficient associated with the rejecting style in the normative model supports the prospect that other predictors are masking its contribution. It should also be reiterated that the models explained a small amount of variability in the identity style orientations. This is not unusual in research on identity styles, likely due to the large role of personality relative to parenting style in determining identity outcomes (Smits et al., 2008). For example, Berzonsky has associated the personality trait of being open to experience as being an important correlate with the informational identity style (Berzonsky, 1990; Duriez, Soenens, & Beyers, 2004)

Hypothesis 2: A child's assessment of parenting style should be more strongly associated with identity style and perceived mattering than a parental assessment alone.

Unfortunately, neither of the datasets used in this study provided the opportunity to compare assessments of perceived mattering from different sources. However, with regard to identity style, findings from the NLSCY provide support for this hypothesis. Consistent with previous research, the correlation between parent and child reports of parenting style were low (Cottrell et al., 2003; Paulson, 1994; Paulson & Sputa, 1996; Smetana, 1995). Other research has also found that parents tend to view their own parenting style as more authoritative than their children do, which accords with the results of this study. Both PMKs and children reported nurturing behaviour more frequently than rejecting behaviour, though nurturing scores were slightly higher for PMKs, and rejection scores were slightly higher for children. Furthermore, the PMK reports were not significant predictors of identity style or later outcomes once the child reports were included in the models. After accounting for the PMK report, the child report of parental nurturing was still positively associated with the normative and informational identity styles, and both child reports were related to diffuse-avoidance. The child report of parental nurturing was also positively correlated with psychosocial outcomes in cycle 5, both before and after identity style was added to the model. This accords with earlier work that has suggested that adolescent perceptions of parenting style and behaviour may be more consequential for later development than those of parents (Bell et al., 2001; Berzonsky et al., 2007; Paulson, 1994).

Along with their reports of parenting style, PMKs in the NLSCY also responded to a measure of family functioning. Somewhat surprisingly, it was not predictive of any of the identity styles, despite being entered into the models ahead of the reports of parenting style. Matheis and Adams (2004) found similar results in their study of university students, providing only limited evidence that an expressive and cohesive family climate was related to the normative and diffuse-avoidant identity styles, and finding no association between family conflict and identity style. The only outcome for which family functioning was significant in this study was psychosocial development in cycle 5, but the association did not persist after other variables were included. Family functioning was more strongly correlated with the PMK reports of parenting style than any other predictors or outcomes, which may be a result of the fact that they were both reported by the same source. It is possible that the relationship with the PMK reports confounded the effect of family functioning, though one would expect larger bivariate correlations with the other variables in that case. Both this analysis, and that of Matheis and Adams, used assessments of family functioning that were provided by the parents or PMKs of the youth under study. Given the relative import of the child reports of parenting style, future research should explore measures of family functioning collected from different sources. It is possible that the *perception* of the family climate on behalf of a child is more strongly correlated with his or her identity style and later psychosocial development.

Hypothesis 3: The perception of mattering will be positively associated with the normative and information-oriented identity styles, and negatively associated with the diffuse-avoidant identity style.

The study of university students offered some limited support for this hypothesis. In general, there were stronger correlations among the identity style orientations, and among the mattering referents, than between identity style and mattering. The longitudinal data were used to separate change over time into within- and between-subjects components, though most of the variability remained unexplained by the variables that were included. Part of this may be due to the limited amount of change that was observed over the time period that was studied. With the exception of a slight decrease in use of the normative identity style, all of the outcomes remained relatively stable during this period. Relative to other participants, respondents with higher than average diffuse-avoidant scores also tended to have higher than average normative style scores, and lower informational scores. Similarly, when comparing the average scores of different respondents, those who felt they mattered more to one of their parents also felt they mattered more to the other, as well as to their friends. Looking at change over time in the scores for each participant, diffuse-avoidant and normative styles scores varied positively together, and diffuse-avoidant and informational scores varied negatively. Likewise, at time-points when perceived mattering to mother was higher than usual for a given respondent, so was perceived mattering to father and to friends.

There was some evidence that, within-individuals, scores for the diffuse-avoidant identity style were higher when mattering to friends was higher, and when mattering to mother was lower. Similarly, between-subject effects showed that participants with higher average diffuse-avoidant scores felt they mattered more to their friends, and respondents with higher average normative and informational identity style scores felt they mattered

more to their mothers. The distinction between mattering to parents and mattering to friends was not made in the hypothesis, as previous studies have found that the effect of mattering to parents and peers is additive in the prediction of well-being (Marshall, 2004). Indeed, the positive associations between mattering to mother and the normative and informational identity styles is consistent with expectations, as other research has found a variety of perceived parenting dimensions to be related positively to these orientations, and negatively to diffuse-avoidance (Adams et al., 2006; Berzonsky et al., 2007; Berzonsky, 2011). Similarly, Berzonsky and Kuk (2000) found a negative relationship between mature social relationships with peers and the diffuse-avoidant identity style.

There are a few plausible explanations for the positive relationship between mattering to peers and the diffuse-avoidant identity style. One defining characteristic of the diffuse-avoidant orientation is the tendency to be other-focused, paying particular attention to popularity and external impressions (Berzonsky, 2011). It is possible that these efforts elicit attention and a sense of importance that translates into a sense of mattering. It is also conceivable that the incentive to fit in, especially during the transition to university, puts pressure on youth to make things work with peers, which may involve adopting a "wait-and-see" attitude when confronting personal problems (Adams et al., 2006; Marshall, 2001). In fact, Adams et al. suggest some students may enter into a "passive moratorium", where they adopt a future-oriented approach to identity conflicts, rather than strategically avoiding them or procrastinating (2006, p. 89).

Also possible is that this finding is an artifact of this data. Those with a diffuse-avoidant identity style are more likely to have difficulties adjusting to university (Berzonsky & Kuk, 2005), as are those who feel they do not matter to others (France & Finney, 2010; Rayle, & Chung, 2007). As this analysis required at least two waves of data from each respondent, those with extreme scores on either of these measures are likely not to be represented in the sample, especially individuals who are low on both. Additionally, neither the measure of identity style nor mattering was particularly robust. There was limited variability in the mattering scores, with most participants feeling they mattered a lot to all three referents. As well, only three items from the Identity Style Inventory were used for each orientation. Compared to the full version of the ISI (see Appendix C), the items that were selected for diffuse-avoidance do not include the most problematic behaviours (e.g. "It doesn't pay to worry about values in advance; I decide things as they happen"). Higher scores on the diffuse-avoidant identity style scale in this study may not indicate the same dysfunctional approach, as would have the original measure, on which the hypothesis was based. Caution should be taken with regard to these findings, awaiting replication with better measures and a broader sample.

4.2 Summary, Limitations, and Future Research

To recap, the analyses conducted in this dissertation provide mixed support for the hypotheses proposed in the introduction. However, the results are consistent with the multidimensional model of identity, in which parenting style functions as a contextual element of the environment in which identity develops, and is filtered by individuals through their own internal process of attention, selection, and assignment of meaning.

The identity style orientations characterize this activity, and the perception of mattering is one possible outcome. The findings of the above studies suggest that the *perception* of a nurturing or rejecting parenting style was significantly associated with the characteristic approach that was later taken to the processing of identity-relevant information, and that identity style mediated the relationship with later psychosocial outcomes. Similarly, support was found for the association between identity style and the perception of mattering to significant others. Both within and between individuals, identity style corresponded with the perception of mattering to significant others, and mattering to parents, in particular, was tied to a more functional orientation.

Regrettably, not all of the predicted relationships could be tested with the available data. Neither of the datasets that were used in the preceding analyses included a measure of parenting style in conjunction with a measure of mattering. Part of the reason for this may be due to timing, as mattering as a concept has gained a foothold in the literature only relatively recently. Owens and Samblanet (2013) report a rising number of studies on the subject, but note that the increase has occurred primarily in the last decade. By comparison, the NLSCY began in 1994/95, and ran through 2008/09. Furthermore, the second dataset that was analyzed was collected from a university population, and nearly all of the participants were living in residence on campus. A retrospective self-report of parenting style could notionally have been incorporated into the questionnaire, but would not have provided the same quality of information as that gathered from participants at younger ages still living at home. Ultimately, the longitudinal nature of the datasets that

were available provided an opportunity to examine the interactions of a number of key variables in the model, even if that left some elements to be examined in future research.

To further test the model, measures of parenting style, perceived mattering, and identity style should be included in the same analysis. This would help to address the question of how parenting style affects the perception of mattering, and how both of these constructs interact with identity style and later psychosocial development. One might expect that a nurturing parenting style should lead to a positive sense of mattering, in contrast to an uninvolved or neglectful parenting style that would not provide that sense. It is also possible that an actively rejecting parenting style that involves a high degree of negative attention may also confer a sense of mattering (Rosenberg & McCullough, 1981). One complication that will need to be considered when conducting a study that includes both mattering and parenting style is the potential overlap of the constructs, depending on the measures that are used. Indeed, the initial development of the construct of mattering was done using a subset of items from existing measures of the parent-child relationship (1981). To demonstrate, the measure of parenting style used in the NLSCY contains items might be considered to reflect some elements of mattering. For example, items from the parental nurturing scale, such as, "my parents make sure I know I am appreciated", and "my parents listen to my ideas and opinions", are very similar to those used by Rosenberg as "expressions of mattering: the feeling that one is an object of interest to parents, that one is important to parents, that one is an object of concern, that one's opinions count, and that one is wanted" (p.5). However, as previously discussed, a key contribution of Marshall (1998) was the separation of the internalized *perception* of

mattering from what she "considered to be types of attending behaviours of specific others which may contribute to an interpretation of mattering" (p.6). In so doing, she located the construct within the individual, rather than as a product of interaction. Perceived mattering is the result of ongoing cognitive assessment and reflexivity, which feeds into the reciprocal nature of the parent-child relationship, but is not determined by it, nor identical to it. Care will need to be taken to identify measures that adequately capture the construct of perceived mattering as distinct from other aspects of the parent-child bond.

In all of the models that were tested with the available data, there remained a large amount of variability to explain. This may be due to the extended longitudinal nature of the NLSCY, in which several years passed between cycles, or due to the limited amount of change in the measures that were used in the study of mattering in university students. In both cases, better measures, and a wider sample, might lead to more robust findings. A broader sample would be of particular value given the concern with the "forgotten half", those young people who are difficult to contact for participation in research projects, and who experience some of the more difficult challenges in making a successful transition to adulthood (Côté & Allahar, 2006). Lower income households, and those with higher levels of family dysfunction, were less likely to have respondents involved in repeated cycles of the NLSCY. Similarly, university students who are available to participate in two or more years of a campus study are, by definition, not those who drop out. Other research has found a correlation between survey participation and income and educational level (e.g. Fitzgerald, Gottschalk, & Moffitt, 1998; Radler &

Ryff, 2010), though the degree to which this results in biased findings depends on what variables are being studied (Groves, 2006). In both of these samples, there was a greater preponderance of privilege and wealth than in the society as a whole, which influences the range of the variables that are tested, and limits the potential results. Furthermore, to the extent that research such as this is conducted with the goal of understanding the processes that enable individual development and success, a lack of knowledge regarding the challenges faced in this area by the most vulnerable youth leaves behind those who might benefit most from the insight.

An ideal study in this area would involve multiple measures of perceived mattering, parenting style, and identity style, coupled with psychosocial functioning, tested on a broad sample with a particular focus on those youth who are not typically represented in academic research. Of particular use would be the collection of all measures at repeated time points, to fully disentangle the direction of relationships between the constructs. To capture short-term fluctuation, a daily-diary methodology could be employed. Furthermore, to capture the interaction of these variables at different stages of development, participants should be drawn from late childhood through early adulthood. The most realistic way to conduct such a study would be with a panel design that had groups of different participants at different ages. All participants could complete measures of perceived mattering, parenting style, identity style, and psychosocial functioning, followed by a week-long daily diary that tracked the same constructs. The same measures and diary could be completed again after 6 months, and longer if resources permitted.

Despite the limitations, this study makes a number of valuable contributions to the literature on parenting style, perceived mattering, and identity style. Analyses using the NLSCY addressed calls for more research including global measures of the family environment (Matheis & Adams, 2004), as well as including reports of parenting style from multiple sources (Tyyskä, 2009). On the burgeoning topic of perceived mattering, this study was one of few, if any, to examine the topic in conjunction with a direct measure of identity development. By combining all of these subjects in a single framework, that of the multidimensional model of identity (Côté & Levine, 2002, p. 135), it is hoped that future research will be spurred that continues to explore connections between identity processes and the indispensable social connection represented by mattering.

A fundamental argument of Côté's theory of identity capital is that the transition to adulthood is more precarious now than it has been in the past, as traditional authority structures have had their legitimacy challenged, and there are fewer "default" paths to fruitful and rewarding roles in society. In this context, he argues, "the *resources* at each individual's disposal become more important, including those psychological resources that can contribute to an internal point of reference… and an ability to reflexively evaluate and maneuver through a variety of social contexts" (p. 143). One key developmental resource is the psychological wherewithal to process and incorporate identity-relevant information, without falling back for self-definition on the expectations of others, or the ephemeral demands of a particular situation. However, identity is only significant to the extent it is a shared social construction, validated in interaction with

others. The perception of mattering is critical to a meaningful life and vital involvement with others, and for this reason, it is an important consideration in the field of identity studies.

Endnotes

[1] The analysis was conducted at the University of Western Ontario RDC, and the Prairie Regional RDC, which is part of the Canadian Research Data Centre Network (CRDCN). The services and activities provided by the CRDCN are made possible by the financial or in-kind support of the SSHRC, the CIHR, the CFI, Statistics Canada and participating universities whose support is gratefully acknowledged. The views expressed in this paper do not necessarily represent the CRDCN's or that of its partners'.

[2] Statistics Canada does not include the individual items for the EIQ-i:YV in the microdata file, so Cronbach's alpha cannot be calculated for the sample used in this study. They also do not provide the value for the entire survey sample in any of the available documentation.

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Appendices

Appendix A: NLSCY Parenting Style Items

PMK Questionnaire

The next few questions have to do with different ways parents act toward their sons/daughters. I would like you to tell me how often, in general in the last six months, you have acted in the following ways.

NEVER – RARELY – SOMETIMES – OFTEN – ALWAYS

… How often do you smile at him/her? (Nurturing)

… How often do you soon forget a rule that you have made? (Rejecting)

… How often do you nag %him/her% about little things? (Rejecting)

… How often do you listen to %his/her% ideas and opinions? (Nurturing)

… How often do you solve a problem together when you disagree about something? (Nurturing)

… How often do you keep rules only when it suits you? (Rejecting)

… How often do you get angry and yell at %him\her%? (Rejecting)

… How often do you make sure that %he/she% knows that %he/she% is appreciated? (Nurturing)

… How often do you threaten punishment more often than you use it? (Rejecting)

… How often do you speak of good things that %he/she% does? (Nurturing)

… How often do you enforce a rule or do not enforce a rule depending on your mood? (Rejecting)

… How often do you hit %him/her% or threaten to do so? (Rejecting)

… How often do you seem proud of the things %he/she% does? (Nurturing)

Youth Questionnaire

My parents (or step parents or foster parents)...

NEVER – RARELY – SOMETIMES – OFTEN – ALWAYS

… smile at me (Nurturing)

… soon forget a rule they have made (Rejecting)

… nag me about little things (Rejecting)

… listen to my ideas and opinions (Nurturing)

… and I solve a problem together whenever we disagree about something (Nurturing)

… only keep rules when it suits them (Rejecting)

… get angry and yell at me (Rejecting)

… make sure I know I am appreciated (Nurturing)

… threaten punishment more often than they use it (Rejecting)

… speak of the good things I do (Nurturing)

… enforce a rule or do not enforce a rule depending upon their mood (Rejecting)

… hit me or threaten to do so (Rejecting)

… seem proud of the things I do (Nurturing)

Appendix B: NLSCY Family Functioning Items

The following statements are about families and family relationships. For each one, please indicate which response best describes your family:

STRONGLY AGREE – AGREE – DISAGREE – STRONGLY DISAGREE

… Planning family activities is difficult because we misunderstand each other.

… In times of crisis we can turn to each other for support.

… We cannot talk to each other about sadness we feel.

… Individuals (in the family) are accepted for what they are.

… We avoid discussing our fears or concerns.

… We express feelings to each other.

… There are lots of bad feelings in our family.

… We feel accepted for what we are.

… Making decisions is a problem for our family.

… We are able to make decisions about how to solve problems.

… We don't get along well together.

… We confide in each other.

… Drinking is a source of tension or disagreement in our family.

Appendix C: NLSCY Identity Style Inventory

In the next section, there is a number of statements about beliefs, attitudes, and/or ways of dealing with issues. Use them to describe yourself. There are no right or wrong answers. Use the 1 to 5 point scale to indicate the degree to which you think each statement is uncharacteristic (1) or characteristic (5) of yourself. For instance, if the statement is not like you at all, give it a 1, if it is very much like you, give it a 5.

NOT LIKE ME AT ALL - VERY MUCH LIKE ME

… I've spent a great deal of time thinking seriously about what I should do with my life. (INFO)

… I'm not really sure what I'm doing about school; I guess things will work themselves out. (DIFF)

… I've more-or-less always operated according to the values with which I was brought up. (NORM)

… I've spent a good deal of time reading and talking to others about religious ideas. (INFO)

… When I discuss an issue with someone, I try to assume their point of view and see the problem from their perspective. (INFO)

… It doesn't pay to worry about values in advance; I decide things as they happen. (DIFF)

… I've always had purpose in my life; I was brought up to know what to strive for. (NORM)

… Many times,by not concerning myself with personal problems, they work themselves out. (DIFF)

… I've spent a lot of time reading and trying to make some sense out of political issues. (INFO)

… I'm not really thinking about my future now; it's still a long way off. (DIFF)

… I've spent a lot of time and talked to a lot of people trying to develop a set of values that make sense to me. (INFO)

… Regarding religion, I've always known what I believe and don't believe; I never really had any serious doubts. (NORM)

… I know that I am going to college/university and what I am going to major in. (NORM)

… I think it's better to have a firm set of beliefs than to be open-minded. (NORM)

… When I have to make a decision, I try to wait as long as possible in order to see what will happen. (DIFF)

… When I have a personal problem, I try to analyze the situation in order to understand it. (INFO)

… I find it's best to seek out advice from professionals (e.g., clergy, doctors, lawyers) when I have problems. (INFO)

… It's best for me not to take life too seriously; I just try to enjoy it. (DIFF)

… I think it's better to use one set of values consistently all the time, rather than change them in different situations. (NORM)

… I try not to think about or deal with problems for as long as I can. (DIFF)

… I find that personal problems often turn out to be interesting challenges. (INFO)

… I try to avoid personal situations that will require me to think a lot and deal with them on my own. (DIFF)

… Once I know the correct way to handle a problem, I prefer to stick with it. (NORM)

… When I have to make a decision, I like to spend a lot of time thinking about my options. (INFO)

… I prefer to deal with situations the way that other people expect me to. (NORM)

… I like to have the responsibility for handling problems in my life that require me to think on my own. (INFO)

… Sometimes I refuse to believe a problem will happen, and things manage to work themselves out. (DIFF)

… When making important decisions I like to have as much information as possible. (INFO)

… When I know a situation is going to cause me stress, I try to avoid it. (DIFF)

… I find it's best for me to rely on the advice of close friends or relatives when I have a problem. (NORM)

Appendix D: NLSCY Emotional Intelligence Quotient Inventories (EIQ-i and EIQ-i:YV)

EIQ-i - Youth Version (EIQ-i:YV)

Now you will be asked about yourself and how you relate to other people at home, school and work. (Choose only one answer for each sentence.)

RARELY TRUE OF ME
SOMETIMES TRUE OF ME
OFTEN TRUE OF ME
VERY OFTEN TRUE OF ME

… It is easy to tell people how I feel. (Interpersonal)

… I like doing things for others. (Intrapersonal)

… I get angry easily. (Stress Management; Reverse scored)

… I can understand hard questions. (Adaptability)

… I think that most things I do will turn out OK. (General Mood)

… I can talk easily about my feelings. (Interpersonal)

… I feel bad when other people have their feelings hurt. (Intrapersonal)

… I get upset easily. (Stress Management; Reverse scored)

… I can come up with many ways of answering a hard question when I want to. (Adaptability)

… I hope for the best. (General Mood)

… I can easily describe my feelings. (Interpersonal)

… I know when people are upset, even when they say nothing. (Intrapersonal)

… When I get angry, I act without thinking. (Stress Management; Reverse scored)

… When answering hard questions, I try to think of many solutions. (Adaptability)

… I enjoy the things I do. (General Mood)

EIQ-i - Adult Version (EIQ-i)

I will read you 20 brief statements. For each one, please choose the answer that best describes you. There are five possible answers. Choose the answer that seems the best, even if you are not sure. This is not a test; there are no 'right' or 'wrong' answers.

VERY SELDOM TRUE OR NOT TRUE
SELDOM TRUE
SOMETIMES TRUE
OFTEN TRUE
VERY OFTEN TRUE

Tell me how you feel, think, or act most of the time in most situations.

… You are sensitive to the feelings of others. (Interpersonal)

… It's hard for you to describe your feelings. (Intrapersonal; Reverse scored)

… You're impatient. (Stress Management; Reverse scored)

… You try to see things as they really are, without fantasizing or daydreaming. (Adaptability)

… You're optimistic about most things you do. (General Mood)

… You're good at understanding the way other people feel. (Interpersonal)

… Others think that you lack assertiveness. (Intrapersonal; Reverse scored)

… You have a bad temper. (Stress Management; Reverse scored)

… When faced with a difficult situation, you like to collect all the information about it that you can. (Adaptability)

… You believe in your ability to handle most upsetting problems. (General Mood)

… You care what happens to other people. (Interpersonal)

… You're unable to express your ideas to others. (Intrapersonal; Reverse scored)

… It is a problem controlling your anger. (Stress Management; Reverse scored)

… In handling situations that arise, you try to think of as many approaches as you can. (Adaptability)

… You can stay on top of tough situations. (General Mood)

… You have good relations with others. (Interpersonal)

… It's hard for you to make decisions on your own. (Intrapersonal; Reverse scored)

… You have strong impulses that are hard to control. (Stress Management; Reverse scored)

… When trying to solve a problem, you look at each possibility and then decide on the best way. (Adaptability)

… You generally expect things will turn out all right, despite setbacks from time to time. (General Mood)

Appendix E: Regression of Child Reports of Parenting Style on the Diffuse/Avoidant Identity Style, Stratified by Gender

	All			Females			Males		
Variable	B	SE	β	B	SE	β	B	SE	β
Female	-2.45**	0.77**	-.19**						
Nurturing	-0.14	0.13	-.10	-0.34*	0.14*	-.23*	0.05	0.19	.03
Rejecting	0.21*	0.09*	.15*	0.05	0.11	.04	0.34*	0.14*	.25*
Constant	18.67***	2.83***		21.26***	2.93***		13.90**	4.28**	
F	21.20***			7.06*			7.05*		
R2	0.09			0.06			0.06		

Note: * $p < .05$, ** $p < .01$, *** $p < .001$

Appendix F: Regression of PMK Reports of Parenting Style on the Diffuse/Avoidant Identity Style, Stratified by Gender

	All			Females			Males		
Variable	*B*	*SE*	β	*B*	*SE*	β	*B*	*SE*	β
Female	-2.56***	0.70***	-.21***						
Nurturing	-0.07	0.15	-.03	-0.2	0.2	-.09	0.07	0.24	.03
Rejecting	0.17	0.11	.10	-0.03	0.14	-.02	0.39*	0.16*	.24*
Constant	17.77***	3.16***		19.52***	4.09***		13.06*	5.49*	
F	21.43***			1.06			12.17***		
R^2	.06			.01			.05		

Note: * p < .05, ** p < .01, *** p < .001

Appendix G: Summary of Hierarchical Regression Analysis for Variables Predicting the Informational Identity Style

	Block 1			Block 2			Block 3			Block 4			
Variable	*B*	*SE*	β	*B*	*SE*	β	*B*	*SE*	β	*B*	*SE*	β	*SC*
Female	1.65*	0.79	.13*	1.63*	0.77	.12*	1.43	0.75	.11	1.31	0.78	.10	.45***
Family Functioning				-0.11	0.09	-.08	-0.07	0.09	-.05	-0.02	0.08	-.01	-.29***
Nurturing - PMK							0.20	0.15	.08	0.12	0.16	.05	.44***
Rejecting - PMK							-0.02	0.12	-.01	-0.03	0.11	-.02	-.21***
Nurturing - Child										0.37**	0.15	.24**	.90***
Rejecting - Child										0.04	0.12	.03	-.32***
Constant	22.56***	0.50		23.42***	0.84		19.61***	3.74		13.47**	4.56		
F	4.41*			8.07*			9.54*			16.05**			
R^2	.02			.02			.03			.08			
F of ΔR^2				1.54			2.66			6.80*			

Note: * p < .05, ** p < .01, *** p < .001; SC= structural coefficient (bivariate correlation between x and y-hat); Standard Errors are bootstrap weighted estimates

Appendix H: Summary of Hierarchical Regression Analysis for Variables predicting the Normative Identity Style

	Block 1			Block 2			Block 3			Block 4			
Variable	*B*	*SE*	β	*B*	*SE*	β	*B*	*SE*	β	*B*	*SE*	β	*SC*
Female	0.49	0.66	.04	0.48	0.66	.04	0.28	0.67	.02	0.13	0.64	.01	.16*
Family Functioning				-0.09	0.06	-.08	-0.06	0.07	-.05	-0.01	0.07	-.01	-.29***
Nurturing - PMK							0.22	0.13	.10	0.13	0.13	.06	.41***
Rejecting - PMK							0.02	0.10	.02	0.03	0.09	.02	-.13*
Nurturing - Child										0.33**	0.11	.25**	.97***
Rejecting - Child										-0.01	0.08	-.01	-.42***
Constant	18.52***	0.4		19.26***	0.71		14.78***	3.07		9.94**	3.79		
F	0.56			2.76			6.58			20.39***			
R^2	.00			.01			.02			.07			
F of ΔR^2				2.02			3.23			11.73**			

Note: * p < .05, ** p < .01, *** p < .001; SC= structural coefficient (bivariate correlation between x and y-hat); Standard Errors are bootstrap weighted estimate

Appendix I: Summary of Hierarchical Regression Analysis for Variables Predicting the Diffuse/Avoidant Identity Style, All Respondents

	Block 1			Block 2			Block 3			Block 4			
Variable	*B*	*SE*	β	*B*	*SE*	β	*B*	*SE*	β	*B*	*SE*	β	*SC*
Female	-2.95***	0.77	-.23***	-2.90***	0.75	-.23***	-2.89***	0.77	-.23***	-2.66***	0.78	-0.21***	-.73***
Family Functioning				0.14	0.10	.11	0.12	0.11	.09	0.09	0.11	0.07	.37***
Nurturing - PMK							0.00	0.18	.00	0.04	0.18	0.02	-.32***
Rejecting - PMK							0.15	0.12	.09	0.11	0.12	0.07	.35***
Nurturing - Child										-0.13	0.13	-0.09	-.53***
Rejecting - Child										0.17	0.09	0.12	.63***
Constant	18.15***	0.66		16.96***	0.99		15.80***	4.20		16.24**	5.21		
F	14.66***			16.86***			23.57***			32.77***			
R^2	.05			.07			.07			.10			
F of ΔR^2				2.14			1.73			6.10*			

Note: * p < .05, ** p < .01, *** p < .001; SC= structural coefficient (bivariate correlation between x and y-hat); Standard Errors are bootstrap weighted estimates

Appendix J: Summary of Hierarchical Regression Analysis for Variables Predicting the Diffuse/Avoidant Identity Style, Females Only

	Block 1			Block 2			Block 3		
Variable	*B*	*SE*	β	*B*	*SE*	β	*B*	*SE*	β
Family Functioning	0.12	0.14	.10	0.10	0.15	.09	0.06	0.14	.05
Nurturing - PMK				-0.16	0.23	-.07	-0.12	0.21	-.05
Rejecting - PMK				-0.03	0.15	-.02	-0.02	0.15	-.01
Nurturing - Child							-0.35*	0.15	-.25*
Rejecting - Child							0.00	0.12	.00
Constant	14.24***	1.18		17.81***	5.15		23.90***	5.28	
F	0.79			1.89			9.72		
R^2	.01			.02			.07		
F of ΔR^2				0.54			5.93*		

Note: * p < .05, ** p < .01, *** p < .001; Standard Errors are bootstrap weighted estimates

Appendix K: Summary of Hierarchical Regression Analysis for Variables Predicting the Diffuse/Avoidant Identity Style, Males Only

	Block 1			Block 2			Block 3		
Variable	*B*	*SE*	β	*B*	*SE*	β	*B*	*SE*	β
Family Functioning	0.18	0.13	.13	0.14	0.16	.10	0.14	0.16	.10
Nurturing - PMK				0.18	0.31	.08	0.18	0.29	.08
Rejecting - PMK				0.35*	0.18	.21*	0.27	0.16	.16
Nurturing - Child							0.09	0.19	.06
Rejecting - Child							0.29*	0.14	.22*
Constant	16.68***	1.28		10.34	7.25		6.68	8.59	
F	1.78			9.73*			19.90***		
R^2	.02			.05			.09		
F of ΔR^2				4.84			4.65		

Note: * p < .05, ** p < .01, *** p < .001; Standard Errors are bootstrap weighted estimates

Appendix L: Summary of Hierarchical Regression Analysis for Variables Predicting EIQ-i:YV Scores in Cycle 5 , All Respondents

	Block 1			Block 2			Block 3		
Variable	*B*	*SE*	β	*B*	*SE*	β	*B*	*SE*	β
Female	0.22	0.75	.02	0.10	0.75	.01	-0.03	0.76	.00
Family Functioning				-0.18*	0.08	-.14*	-0.14	0.09	-.11
Nurturing - PMK							0.15	0.17	.07
Rejecting - PMK							-0.07	0.10	-.05
Nurturing - Child									
Rejecting - Child									
ISI - Informational									
ISI - Normative									
ISI - Diffuse									
Constant	30.43***	0.62		31.88***	0.83		29.37***	3.94	
F	0.08			5.13			9.33*		
R^2	.00			.02			.03		
F of ΔR^2				5.13*			2.13		

*Note: * p < .05, ** p < .01, *** p < .001; SC= structural coefficient (bivariate correlation between x and y-hat); Standard Errors are bootstrap weighted estimates*

Appendix L: Continued

	Block 4			Block 5			
Variable	*B*	*SE*	β	*B*	*SE*	β	*SC*
Female	-0.25	0.82	-.02	-0.98	0.69	-.08	.04
Family Functioning	-0.08	0.09	-.06	-0.02	0.08	-.02	-.32***
Nurturing - PMK	0.02	0.17	.01	0.02	0.14	.01	.26***
Rejecting - PMK	-0.05	0.10	-.03	-0.05	0.09	-.03	-.21***
Nurturing - Child	0.45***	0.10	.31***	0.35***	0.10	.24***	.75***
Rejecting - Child	-0.04	0.08	-.03	0.00	0.07	.00	-.34***
ISI - Informational				0.18**	0.06	.19**	.68***
ISI - Normative				0.07	0.06	.06	.50***
ISI - Diffuse				-0.19**	0.06	-.19**	-.48***
Constant	23.41***	4.65		22.45***	4.10		
F	36.21***			74.94***			
R^2	.12			.20			
F of ΔR^2	23.44***			25.25***			

*Note: * p < .05, ** p < .01, *** p < .001; SC= structural coefficient (bivariate correlation between x and y-hat); Standard Errors are bootstrap weighted estimates*

Appendix M: Summary of Hierarchical Regression Analysis for Variables Predicting EIQ-i:YV Scores in Cycle 5 , Females Only

	Block 1			Block 2			Block 3			Block 4			
Variable	*B*	*SE*	β	*B*	*SE*	β	*B*	*SE*	β	*B*	*SE*	β	*SC*
Family Functioning	-0.20*	0.10	-.18*	-0.18	0.10	-.16	-0.14	0.10	-.13	-0.06	0.09	-.06	-.36***
Nurturing - PMK				0.09	0.21	.04	0.00	0.20	.00	-0.02	0.18	-.01	.20*
Rejecting - PMK				-0.07	0.12	-.05	-0.04	0.12	-.03	-0.06	0.12	-.04	-.18*
Nurturing - Child							0.45***	0.13	.32***	0.32*	0.13	.22*	.70***
Rejecting - Child							-0.04	0.12	-.03	-0.01	0.11	-.01	-.32**
ISI - Informational										0.31***	0.08	.33***	.79***
ISI - Normative										-0.08	0.07	-.08	.24*
ISI - Diffuse										-0.14	0.08	-.14	-.49***
Constant	32.17***	0.94		30.93***	4.75		23.87***	5.32		22.17***	5.30		
F	4.19*			5.50			17.65***			36.63***			
R^2	.03			.04			.14			.25			
F of ΔR^2				0.79			14.18**			22.80***			

*Note: * p < .05, ** p < .01, *** p < .001; SC= structural coefficient (bivariate correlation between x and y-hat); Standard Errors are bootstrap weighted estimates*

Appendix N: Summary of Hierarchical Regression Analysis for Variables Predicting EIQ-i:YV Scores in Cycle 5 , Males Only

	Block 1			Block 2			Block 3			Block 4			
Variable	*B*	*SE*	β	*B*	*SE*	β	*B*	*SE*	β	*B*	*SE*	β	*SC*
Family Functioning	-0.14	0.12	-.10	-0.08	0.15	-.06	0.02	0.15	.01	0.10	0.13	.07	-.22**
Nurturing - PMK				0.23	0.27	.10	0.05	0.27	.02	0.08	0.22	.03	.29***
Rejecting - PMK				-0.08	0.16	-.05	-0.07	0.16	-.04	-0.04	0.15	-.02	-.22*
Nurturing - Child							0.45**	0.17	.30**	0.36*	0.14	.24*	.70***
Rejecting - Child							-0.04	0.12	-.03	0.04	0.10	.03	-.31**
ISI - Informational										0.01	0.11	.01	.50***
ISI - Normative										0.30*	0.13	.27*	.70***
ISI - Diffuse										-0.27**	0.10	-.26**	-.41**
Constant	31.59***	1.09		27.55***	6.32		22.17**	7.81		20.38**	6.35		
F	1.42			3.93			16.56**			40.08***			
R^2	.01			.02			.11			.21			
F of ΔR^2				1.36			12.95**			17.69***			

*Note: * p < .05, ** p < .01, *** p < .001; SC= structural coefficient (bivariate correlation between x and y-hat); Standard Errors are bootstrap weighted estimates*

Appendix O: Summary of Hierarchical Regression Analysis for Variables Predicting EIQ-i Scores in Cycle 8 , All Respondents

	Block 1			Block 2		
Variable	*B*	*SE*	β	*B*	*SE*	β
Female	2.57**	0.94	.15**	2.50**	0.96	.15**
Family Functioning				-0.11	0.11	-.06
Nurturing - PMK						
Rejecting - PMK						
Nurturing - Child						
Rejecting - Child						
ISI - Informational						
ISI - Normative						
ISI - Diffuse						
EIQ Cycle 5						
Constant	59.72***	0.77		60.60***	1.1	
F	7.40**			7.06*		
R^2	.02			.03		
F of ΔR^2				0.97		

Note. * p < .05, ** p < .01, *** p < .001; SC = structural coefficient (bivariate correlation between x and y-hat); Standard Errors are bootstrap weighted estimates

Appendix O: Continued

	Block 3			Block 4		
Variable	*B*	*SE*	β	*B*	*SE*	β
Female	2.25*	0.93	.13*	1.99*	0.97	.12*
Family Functioning	-0.03	0.12	-.02	0.03	0.12	.02
Nurturing - PMK	0.30	0.20	.09	0.16	0.20	.05
Rejecting - PMK	-0.19	0.16	-.08	-0.15	0.16	-.07
Nurturing - Child				0.43***	0.12	.21***
Rejecting - Child				-0.11	0.12	-.06
ISI - Informational						
ISI - Normative						
ISI - Diffuse						
EIQ Cycle 5						
Constant	56.06***	4.46		51.07***	4.96	
F	17.48***			33.61***		
R^2	.05			.10		
F of ΔR^2	6.28*			13.44***		

Note. * p < .05, ** p < .01, *** p < .001; SC = structural coefficient (bivariate correlation between x and y-hat); Standard Errors are bootstrap weighted estimates

Appendix O: Continued

	Block 5			Block 6			
Variable	*B*	*SE*	β	*B*	*SE*	β	*SC*
Female	1.14	0.92	.07	1.58	0.89	.09	.29***
Family Functioning	0.11	0.11	.06	0.12	0.11	.07	-.14*
Nurturing - PMK	0.13	0.19	.04	0.12	0.19	.04	.30***
Rejecting - PMK	-0.17	0.16	-.08	-0.15	0.16	-.07	-.24***
Nurturing - Child	0.28*	0.13	.14*	0.12	0.13	.06	.51***
Rejecting - Child	-0.04	0.11	-.02	-0.04	0.11	-.02	-.34***
ISI - Informational	0.08	0.09	.06	0.00	0.09	.00	.47***
ISI - Normative	0.33**	0.11	.22**	0.30**	0.11	.20**	.54***
ISI - Diffuse	-0.28***	0.08	-.21***	-0.20**	0.08	-.15**	-.44***
EIQ Cycle 5				0.45***	0.08	.32***	.82***
Constant	50.41***	5.14		40.21***	5.10		
F	55.96***			80.42***			
R^2	.18			.27			
F of ΔR^2	22.91***			35.68***			

Note: * p < .05, ** p < .01, *** p < .001; SC= structural coefficient (bivariate correlation between x and y-hat); Standard Errors are bootstrap weighted estimates

Appendix P: Summary of Hierarchical Regression Analysis for Variables Predicting EIQ-i Scores in Cycle 8 , Females Only

	Block 1			Block 2			Block 3		
Variable	*B*	*SE*	β	*B*	*SE*	β	*B*	*SE*	β
Family Functioning	-0.03	0.14	-.02	0.03	0.14	.02	0.07	0.14	.04
Nurturing - PMK				0.28	0.23	.08	0.20	0.24	.06
Rejecting - PMK				-0.18	0.20	-.08	-0.15	0.20	-.07
Nurturing - Child							0.43**	0.16	.20**
Rejecting - Child							-0.06	0.16	-.03
ISI - Informational									
ISI - Normative									
ISI - Diffuse									
EIQ Cycle 5									
Constant	62.53***	1.42		58.16***	5.26		51.58***	5.86	
F	0.06			3.98			10.53		
R^2	.00			.02			.06		
F of ΔR^2				3.65			7.32*		

Note: * p < .05, ** p < .01, *** p < .001; SC= structural coefficient (bivariate correlation between x and y-hat); Standard Errors are bootstrap weighted estimates

Appendix P: Continued

	Block 4			Block 5			
Variable	*B*	*SE*	β	*B*	*SE*	β	*SC*
Family Functioning	0.14	0.14	.08	0.17	0.14	.10	-.04**
Nurturing - PMK	0.13	0.22	.04	0.14	0.23	.04	.25***
Rejecting - PMK	-0.21	0.20	-.09	-0.18	0.20	-.08	-.25***
Nurturing - Child	0.27	0.16	.13	0.12	0.16	.06	.51***
Rejecting - Child	-0.02	0.15	-.01	-0.02	0.15	-.01	-.29***
ISI - Informational	0.15	0.11	.11	0.00	0.11	.00	.50***
ISI - Normative	0.21	0.12	.14	0.25*	0.12	.16*	.46***
ISI - Diffuse	-0.20*	0.09	-.14*	-0.14	0.09	-.10	-.39***
EIQ Cycle 5				0.47***	0.11	.31***	.85***
Constant	50.88***	6.31		40.46***	6.44		
F	30.61***			48.71***			
R^2	.12			.19			
F of ΔR^2	10.94**			19.65***			

Note: * p < .05, ** p < .01, *** p < .001; SC= structural coefficient (bivariate correlation between x and y-hat); Standard Errors are bootstrap weighted estimates

Appendix Q: Summary of Hierarchical Regression Analysis for Variables Predicting EIQ-i Scores in Cycle 8, Males Only

	Block 1			Block 2			Block 3		
Variable	*B*	*SE*	β	*B*	*SE*	β	*B*	*SE*	β
Family Functioning	-0.21	0.17	-.12	-0.12	0.18	-.06	-0.01	0.19	-.01
Nurturing - PMK				0.30	0.30	.10	0.11	0.32	.04
Rejecting - PMK				-0.19	0.20	-.09	-0.14	0.21	-.06
Nurturing - Child							0.44*	0.17	.23*
Rejecting - Child							-0.16	0.17	-.09
ISI - Informational									
ISI - Normative									
ISI - Diffuse									
EIQ Cycle 5									
Constant	61.44***	1.47		56.74***	6.92		52.58***	7.97	
F	1.58			4.47			12.87*		
R^2	.01			.03			.09		
F of ΔR^2				2.77			1.78*		

Note: * p < .05, ** p < .01, *** p < .001; SC= structural coefficient (bivariate correlation between x and y-hat); Standard Errors are bootstrap weighted estimates

Appendix Q: Continued

	Block 4			Block 5			
Variable	*B*	*SE*	β	*B*	*SE*	β	*SC*
Family Functioning	0.10	0.16	.06	0.06	0.14	.04	-.20*
Nurturing - PMK	0.15	0.33	.05	0.12	0.32	.04	.27***
Rejecting - PMK	-0.10	0.21	-.04	-0.08	0.21	-.04	-.25**
Nurturing - Child	0.29	0.18	.15	0.14	0.19	.07	.49***
Rejecting - Child	-0.02	0.16	-.01	-0.04	0.16	-.02	-.33***
ISI - Informational	-0.01	0.14	.00	-0.01	0.14	-.01	.41***
ISI - Normative	0.50*	0.22	.34*	0.37	0.21	.25	.62***
ISI - Diffuse	-0.39**	0.12	-.29**	-0.28*	0.12	-.21*	-.41***
EIQ Cycle 5				0.43***	0.12	.33***	.84***
Constant	49.85***	7.86		41.14***	7.74		
F	24.80***			36.40***			
R^2	.24			.33			
F of ΔR^2	14.84**			13.11***			

Note: * p < .05, ** p < .01, *** p < .001; SC= structural coefficient (bivariate correlation between x and y-hat); Standard Errors are bootstrap weighted estimates

Appendix R: Summary of Hierarchical Regression Analysis for Variables Predicting EIQ-i Scores in Cycle 8, All Respondents, EIQ-i:YV Scores Entered in First Block

	Block 1			Block 2			Block 3		
Variable	*B*	*SE*	β	*B*	*SE*	β	*B*	*SE*	β
EIQ Cycle 5	0.59***	0.08	.42***	0.59***	0.08	.42***	0.59***	0.08	.42***
Female				2.44**	0.87	.14**	2.44**	0.89	.14**
Family Functioning							0.00	0.11	.00
Nurturing - PMK									
Rejecting - PMK									
Nurturing - Child									
Rejecting - Child									
ISI - Informational									
ISI - Normative									
ISI - Diffuse									
Constant	42.90***	2.57		41.73***	2.63		41.78***	2.73	
F	51.01***			55.96***			56.46***		
R^2	.18			.20			.20		
F of ΔR^2				7.82**			0.00		

Note: * p < .05, ** p < .01, *** p < .001; Standard Errors are bootstrap weighted estimates

Appendix R: Continued

	Block 4			Block 5			Block 6		
Variable	*B*	*SE*	β	*B*	*SE*	β	*B*	*SE*	β
EIQ Cycle 5	0.58***	0.08	.41***	0.53***	0.09	.38***	0.45***	0.08	.32***
Female	2.27**	0.86	.13**	2.11*	0.88	.12*	1.58	0.89	.09
Family Functioning	0.05	0.11	.03	0.07	0.11	.04	0.12	0.11	.07
Nurturing - PMK	0.21	0.18	.07	0.15	0.19	.05	0.12	0.19	.04
Rejecting - PMK	-0.14	0.15	-.06	-0.12	0.16	-.05	-0.15	0.16	-.07
Nurturing - Child				0.20	0.12	.10	0.12	0.13	.06
Rejecting - Child				-0.09	0.11	-.05	-0.04	0.11	-.02
ISI - Informational							0.00	0.09	.00
ISI - Normative							0.30**	0.11	.20**
ISI - Diffuse							-0.20**	0.08	-.15**
Constant	39.13***	4.65		38.65***	4.75		40.21***	5.10	
F	61.39***			67.55***			80.42***		
R^2	.21			.22			.27		
F of ΔR^2	3.59			3.71			14.57**		

Note: * p < .05, ** p < .01, *** p < .001; Standard Errors are bootstrap weighted estimates

Appendix S: Summary of Hierarchical Regression Analysis for Variables Predicting EIQ-i Scores in Cycle 8, Females Only, EIQ-i:YV Scores Entered in First Block

	Block 1			Block 2			Block 3		
Variable	*B*	*SE*	β	*B*	*SE*	β	*B*	*SE*	β
EIQ Cycle 5	0.56***	0.11	.37***	0.57***	0.11	.38***	0.56***	0.11	.37***
Family Functioning				0.08	0.14	.05	0.13	0.14	.08
Nurturing - PMK							0.23	0.23	.07
Rejecting - PMK							-0.14	0.19	-.06
Nurturing - Child									
Rejecting - Child									
ISI - Informational									
ISI - Normative									
ISI - Diffuse									
Constant	45.20***	3.35		44.18***	3.62		40.89***	5.74	
F	25.64***			27.13***			35.08***		
R^2	.14			.14			.15		
F of ΔR^2				0.38			2.39		

Note: * p < .05, ** p < .01, *** p < .001; Standard Errors are bootstrap weighted estimates

Appendix S: Continued

	Block 4			Block 5		
Variable	*B*	*SE*	β	*B*	*SE*	β
EIQ Cycle 5	0.51***	0.11	.34***	0.47***	0.11	.31***
Family Functioning	0.14	0.14	.08	0.17	0.14	.10
Nurturing - PMK	0.19	0.23	.06	0.14	0.23	.04
Rejecting - PMK	-0.13	0.20	-.06	-0.18	0.20	-.08
Nurturing - Child	0.21	0.17	.10	0.12	0.16	.06
Rejecting - Child	-0.04	0.15	-.02	-0.02	0.15	-.01
ISI - Informational				0.00	0.11	.00
ISI - Normative				0.25*	0.12	.16*
ISI - Diffuse				-0.14	0.09	-.10
Constant	39.46***	6.00		40.46***	6.44	
F	37.79***			48.71***		
R^2	.16			.19		
F of ΔR^2	1.70			6.49		

Note: * p < .05, ** p < .01, *** p < .001; Standard Errors are bootstrap weighted estimates

Appendix T: Summary of Hierarchical Regression Analysis for Variables Predicting EIQ-i Scores in Cycle 8, Males Only, EIQ-i:YV Scores Entered in First Block

	Block 1			Block 2			Block 3		
Variable	*B*	*SE*	β	*B*	*SE*	β	*B*	*SE*	β
EIQ Cycle 5	0.62***	0.12	.48***	0.61***	0.12	.47***	0.60***	0.12	.46***
Family Functioning				-0.13	0.14	-.07	-0.07	0.15	-.04
Nurturing - PMK							0.16	0.28	.05
Rejecting - PMK							-0.14	0.20	-.06
Nurturing - Child									
Rejecting - Child									
ISI - Informational									
ISI - Normative									
ISI - Diffuse									
Constant	40.84***	3.79		42.12***	3.73		40.32***	6.96	
F	25.92***			27.16***			27.66***		
R^2	.23			.24			.24		
F of ΔR^2				0.76			1.28		

Note: * p < .05, ** p < .01, *** p < .001; Standard Errors are bootstrap weighted estimates

Appendix T: Continued

	Block 4			Block 5		
Variable	*B*	*SE*	β	*B*	*SE*	β
EIQ Cycle 5	0.55***	0.12	.43***	0.43***	0.12	.33***
Family Functioning	-0.02	0.15	-.01	0.06	0.14	.04
Nurturing - PMK	0.09	0.30	.03	0.12	0.32	.04
Rejecting - PMK	-0.10	0.20	-.05	-0.08	0.21	-.04
Nurturing - Child	0.19	0.16	.10	0.14	0.19	.07
Rejecting - Child	-0.13	0.16	-.07	-0.04	0.16	-.02
ISI - Informational				-0.01	0.14	-.01
ISI - Normative				0.37	0.21	.25
ISI - Diffuse				-0.28*	0.12	-.21*
Constant	40.24***	7.07		41.14***	7.74	
F	31.11***			36.40***		
R^2	.26			.33		
F of ΔR^2	2.33			8.13*		

Note: * p < .05, ** p < .01, *** p < .001; Standard Errors are bootstrap weighted estimates

Appendix U: Summary of Hierarchical Logistic Random Intercept Models Predicting Identity Style Orientation With Separated Within and Between Effects

Variable	Normative *B*	Diffuse/Avoidant *B*	Informational *B*
Cycle 2	.66**	1.02	1.19
	(.09)	(.14)	(.15)
Cycle 3	.57**	1.03	1.31
	(.10)	(.17)	(.20)
Female	.65	.35***	1.01
	(.18)	(.08)	(.21)
Age Wave 1	1.19	.89	1.25
	(.20)	(.12)	(.15)
ISI - Normative (Between)		1.20	.84
		(.16)	(.10)
ISI - Normative (Within)		1.57**	.83
		(.23)	(.12)
ISI - Diffuse-Avoidant (Between)	.90		.37***
	(.16)		(.05)
ISI - Diffuse-Avoidant (Within)	1.13		.67**
	(.17)		(.10)

Note: * $p < .05$, ** $p < .01$, *** $p < .001$; Standard Errors are bootstrap weighted estimates

Appendix U: Continued

Variable	Normative *B*	Diffuse/Avoidant *B*	Informational *B*
ISI – Information (Between)	.57*	.19***	
	(.13)	(.04)	
ISI – Information (Within)	.76	.44***	
	(.14)	(.07)	
Mattering to Mother (Between)	1.48	.63**	1.17
	(.34)	(.11)	(.19)
Mattering to Mother (Within)	.99	.96	.91
	(.22)	(.23)	(.21)
Mattering to Father (Between)	1.07	.98	.93
	(.17)	(.12)	(.11)
Mattering to Father (Within)	1.11	1.16	1.33
	(.24)	(.25)	(.26)
Mattering to Friends (Between)	.83	1.41*	.94
	(.16)	(.23)	(.14)
Mattering to Friends (Within)	.81	1.40	1.28
	(.13)	(.25)	(.18)

Note: * $p < .05$, ** $p < .01$, *** $p < .001$; Standard Errors are bootstrap weighted estimates

Appendix U: Continued

Variable	Normative *B*	Diffuse/Avoidant *B*	Informational *B*
Relationship to Faculty (Between)	.89	1.12	1.39*
	(.15)	(.17)	(.18)
Relationship to Faculty (Within)	1.08	.98	1.18
	(.14)	(.12)	(.14)
Relationship to Students (Between)	1.06	.89	1.17
	(.23)	(.16)	(.19)
Relationship to Students (Within)	.89	1.04	1.37*
	(.14)	(.15)	(.19)
Constant	1.22	2.62**	.70
	(.49)	(.90)	(.21)
Random-effects			
ψ (*Level 2 variance*)	2.57	2.01	1.65
	(.18)	(.15)	(.13)
ρ	.67	.55	.45
Wald χ^2	34.23	128.04	110.08
N	2129	2129	2129

Note: * p < .05, ** p < .01, *** p < .001; Standard Errors are bootstrap weighted estimates

Appendix V: Summary of Hierarchical Logistic Random Intercept Models Predicting Perceived Mattering to Mother, Father, and Friends, With Separated Within and Between Effects

Variable	Mother *B*	Father *B*	Friends *B*
Cycle 2	1.04	.90	.77
	(.19)	(.17)	(.10)
Cycle 3	1.01	.86	.69*
	(.23)	(.20)	(.12)
Female	1.80	1.80	3.16***
	(.64)	(.72)	(.68)
Age Wave 1	.88	1.28	1.13
	(.20)	(.31)	(.15)
Mattering to Mother (Between)		26.62***	2.31***
		(11.41)	(.49)
Mattering to Mother (Within)		24.94***	1.26
		(11.48)	(.32)
Mattering to Father (Between)	4.53***		1.60***
	(1.09)		(.21)
Mattering to Father (Within)	16.56***		1.97**
	(6.05)		(.44)

Note: * $p < .05$, ** $p < .01$, *** $p < .001$; Standard Errors are bootstrap weighted estimates

Appendix V: Continued

Variable	Mother *B*	Father *B*	Friends *B*
Mattering to Friends (Between)	5.67***	5.66***	
	(1.64)	(1.75)	
Mattering to Friends (Within)	1.54	2.06**	
	(.35)	(.45)	
ISI – Normative (Between)	1.68*	1.43	.97
	(.36)	(.34)	(.12)
ISI – Normative (Within)	1.11	.99	.99
	(.24)	(.22)	(.15)
ISI – Diffuse-Avoidant (Between)	.68	.87	1.49**
	(.16)	(.22)	(.21)
ISI – Diffuse-Avoidant (Within)	.63*	1.05	1.20
	(.13)	(.20)	(.18)
ISI – Information (Between)	2.09*	.91	1.22
	(.65)	(.30)	(.23)
ISI – Information (Within)	.86	1.41	1.24
	(.18)	(.31)	(.20)
Relationship to Faculty (Between)	1.32	1.22	1.20
	(.34)	(.35)	(.18)

Note: * $p < .05$, ** $p < .01$, *** $p < .001$; Standard Errors are bootstrap weighted estimates

Appendix V: Continued

Variable	Mother *B*	Father *B*	Friends *B*
Relationship to Faculty (Within)	.96	.92	.91
	(.17)	(.15)	(.12)
Relationship to Students (Between)	.95	1.15	3.14***
	(.28)	(.38)	(.56)
Relationship to Students (Within)	1.02	1.14	1.49**
	(.20)	(.21)	(.22)
Constant	5.20**	1.92	.68
	(2.82)	(1.08)	(.22)
Random-effects			
ψ (*Level 2 variance*)	3.25	3.68	1.84
	(0.28)	(0.32)	(.15)
ρ	.76	.80	.51
Wald χ^2	149.96	150.65	159.06
N	2129	2129	2129

Note: * p < .05, ** p < .01, *** p < .001; Standard Errors are bootstrap weighted estimates

Curriculum Vitae

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Province of Alberta Scholarship
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Corbett, B.A., Greselin, F., Pasquazzi, L., Williams, R., & Zitikis, R. (2014). Income inequality in Canada and the mitigating influence of provincial tax policies: Findings from the 2006 Census. Research Brief to House of Commons Standing Committee on Finance.

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Refereed Conference Presentations:

Corbett, B.A., Greselin, F., Pasquazzi, L., Williams, R., & Zitikis, R. (2012, April). Not all measures of inequality are equal: A comparison between the Gini and the Zenga. Paper presented at the International Interdisciplinary Conference of the International Institute of Social and Economic Sciences, Palermo, Sicily.

Miller, A. & Williams, R. (2010, July). Lessons Learned: Challenges and Opportunities for Cross-National Youth Research. Paper presented at the 17th World Congress of the International Sociological Association, Göteborg, Sweden.

Corbett, B., Dosman, D., Fast, J., Cranswick, K., Williams, R., & Duncan, L. (2009, May). Social contributions of Parents: Time spent volunteering. Poster presented at the Statistics Canada Socio-economic Conference, Gatineau, Quebec.

Caro, D., Corbett, B.A., & Williams, R. (2007, October). Cognitive skill and earning differences between high and low SES youths. Poster presented at the fall academy of The Life Course: Evolutionary and Ontogenetic Dynamics (LIFE), International Max Planck Research School, Detroit, MI.

Williams, R. & Galambos, N. (2007, February). First-year university students' approach to their current developmental period. Poster presented at the 3rd annual Conference on Emerging Adulthood, Tuscan, AZ.

Brown, N., Williams, R., Barker, E.T., & Galambos, N. (2005, January). The role of self-knowledge strategies and enumeration strategies in judging the frequency of recent feelings and activities. Paper presented at the biennial meeting of the Society for Applied Research in Memory and Cognition, Wellington, New Zealand.

Barker, E.T., & Williams, R. (2004, March). Multilevel modeling of stress and coping as risk factors for binge eating in first-year university females: A daily diary study. Paper presented at the biennial meeting of the Society for Research on Adolescence, Baltimore, MD.

Tsui, L., Williams, R., Nicoladis, E, & Von Baeye, E. (2004, June) Differences between English-monolingual, French-English and Chinese-English bilingual parents of pre-school aged children: A comparison of parenting practices related to culture, language, and self-image. Poster presented at the Canadian Psychological Association Annual Convention, St. John's, Newfoundland.

Van Bavel, J., Noels, K.A., & Williams, R. (2002, May). Examining the predictive validity of social axioms on behavioral outcomes: A cross-cultural perspective. Poster presented at the Canadian Psychological Association Annual Convention, Vancouver, British Columbia.